MISSISSIPPI RIVER COMMISSION*

The Mississippi River Commission (MRC) was created by an act of Congress on Jun. 28, 1879. The Flood Control Act of May 15, 1928, authorized the Flood Control, Mississippi River and Tributaries (MR&T) Project. The Commission consists of three officers of the Corps of Engineers, one from the former Coast and Geodetic Survey (presently the National Oceanic and Atmospheric Administration), and three civilians, two of whom must be civil engineers. All members are appointed by the President with the advice and consent of the Senate.

During the fiscal year the Commissioners were: BG Edwin J. Arnold, Jr., appointed President, Oct. 1, 2001; Mr. Sam E. Angel, reappointment as member, Nov. 1999; Mr. R. D. James, civil engineer, member designee, appointed Dec. 1, 1981, with reappointment pending; Mr. William Clifford Smith, appointed Oct. 22, 1998; BG David A. Fastabend, Commander, Northwestern Division, member designee; BG Steven R. Hawkins, Commander, Great Lakes and Ohio River Division, member designee; RADM Nicholas A. Prahl, NOAA, member designee; and COL Thomas A. Holden Jr., Secretary of the Commission (non-voting position).

The MRC is charged, under direction of the Secretary of the Army and supervision of the Chief of Engineers, with prosecution of improvements for flood control of the Mississippi River and of its tributaries and outlets in its alluvial valley, so far as they are affected by Mississippi River backwater, between Head of Passes, LA (mile 0), and Cape Girardeau, MO (1,006 miles AHP-Lower Mississippi mileage terminates at mile 954 AHP), and with prosecution of improvements in the interest of navigation between Cairo, IL (954 miles AHP), and Baton Rouge, LA (234 miles AHP); and for stabilization of the lower 7 miles of the right bank of the Ohio River, to former mouth of Cache River. It also is charged with prosecution of certain flood control works on the Mississippi River and tributaries, as far as they are affected by backwater, between Cape Girardeau, MO, and Rock Island, IL (1,437 miles AHP), and with prosecution of improvements on designated tributaries and outlets below Cape Girardeau for flood control, navigation, major drainage, and related water uses. Authorized operations of the Commission below Cape Girardeau are conducted by District Engineers of New Orleans, Vicksburg, and Memphis Districts within the areas described below, in accordance with approved directives and programs and congressional appropriations therefore.

New Orleans District: Mississippi River project levees and river channel stabilization as required from Head of Passes, mile 0 to 320 AHP, construction of three salinity-control structures for fish and wildlife enhancement, two in lower Mississippi River Delta region, and one in the Mississippi-Louisiana Estuarine Area; Bonnet Carre and Morganza Floodways; maintenance and improvements of Mississippi River navigation channel from Baton Rouge, LA (mile 234 AHP), to mile 320; Baton Rouge Harbor (Devils Swamp); navigation improvement of Atchafalaya and Old Rivers from Mississippi River to Morgan City; control of Old and Atchafalaya Rivers; Atchafalaya Basin Floodways; flood control and drainage improvements in Bayou Cocodrie and tributaries, in Bayou des Glaises, and in Upper Pointe Coupee Loop area; and freshwater distribution from Atchafalaya River to Teche-Vermilion Basins.

Vicksburg District: Mississippi River project levees and river channel stabilization as required from upper limits of New Orleans District (mile 320 AHP) in vicinity of Black Hawk, LA, to Coahoma-Bolivar County line, MS (mile 620 AHP) on left bank, and to vicinity of mouth of White River, AR (mile 599 AHP), on right bank including south bank Arkansas River levee to vicinity of Pine Bluff, AR, and north bank levee to vicinity of Tucker on left bank of Plum Bayou, AR; bank stabilization in lower 36.1 miles of Arkansas River; maintenance and improvement of Mississippi River navigation channel between miles 320 and 599 AHP; Vicksburg and Greenville Harbors; specific fish and wildlife facilities in Tensas, Yazoo, and Big Sunflower Basins; a demonstration erosion control project in the Yazoo Basin; flood control and drainage improvements in Red River backwater area including leveed portions east and west of Black River and south of Red River; Jonesville, LA, Boeuf and Tensas Rivers, Bayou Macon Basins and tributaries, AR and LA, and Bayou Lafourche, LA; Yazoo River Basin, MS, including backwater area; Big and Little Sunflower Rivers, Deer Creek, and Steele Bayou, MS; and Grand

* Authorizing legislation (Tables 41-D and 41-E) is listed at the end of this chapter. All other tables are referenced in text and also appear at the end of the chapter.

Prairie Region and Bayou Meto Basin, AR, including provision for agricultural water supply.

Memphis District: Mississippi River project levees and river channel stabilization as required, from upper limits of Vicksburg District to north bank of Little River diversion channel, MO (1,003 miles AHP), a few miles below Cape Girardeau, MO, on right bank, and to Cache River diversion channel (967 miles AHP) above Cairo, IL, on left bank, including levees and revetment on right bank of Ohio River, in Mounds-Mound City area, IL; except operations above Cairo, IL, do not include channel stabilization on the Mississippi River. Maintenance and improvement of Mississippi River navigation channel between mile 599 and 954 AHP and of Memphis Harbor, TN; specific fish and wildlife facilities in St. Francis Basin; levees in White River backwater area up to vicinity of Augusta, AR, and a pumping plant near mouth of White River; levees and pumping plants at De Valls Bluff and Des Arc, AR; channel improvements in Cache River Basin, AR; channel improvements in Big Creek and tributaries, AR; improvement works in St. Francis River Basin, MO and AR, including backwater area improvements in Belle Fountain Ditch and Drainage District No. 17, AR; Little River diversion channel, MO, and L—Anguille River, AR; Wolf River Basin, TN; Obion and Forked Deer River Basins, TN; Reelfoot Lake area, including channel improvement for Bayou du Chien and Lake No. 9, TN and KY; West Kentucky tributaries, KY; Mud Lake pumping station, TN; and pumping plants and outlet structures in the Cairo-Mounds-Mounds City area, IL. Channel improvements to Eight Mile Creek, Arkansas; Whiteman's Creek Ten Mile and Fifteen Mile Bayous in West Memphis, and vicinity Arkansas; Horn Lake Creek and Tributaries, Mississippi; and Nonconnah Creek, Tennessee and Mississippi. Navigation channel and harbor improvements to Helena Harbor and vicinity, Arkansas at Mississippi River, mile 652 AHP. Channel improvements and pumping station for Helena, Phillips County, and vicinity, Arkansas and St. Johns Bayou and New Madrid Floodway, Missouri.

Field operations of the commission restricted to levee construction under Sec. 6, 1928 Flood Control Act (local interests contributing one-third of costs and furnishing rights-of-way) are conducted within the following limits by two districts reporting directly to the Commission on matters within their jurisdiction—St. Louis District: Mississippi River (Sec. 6) levees from upper limits of Memphis District to Clemens Station, MO (1,254 miles AHP), on right bank, and Hamburg Bay, IL (1,215 miles AHP), on left bank, and Illinois River from its mouth to mile 120 at Havana, IL. Rock Island District: Mississippi River (Sec. 6) levees from upper limits of St. Louis District to Rock Island, IL (1,437 miles AHP). For work accomplished see Table 42-N, page 42-50, Annual Report for 1975.

MISSISSIPPI RIVER AND ALLUVIAL VALLEY BELOW CAPE GIRARDEAU, MO

Location and description. The Mississippi River rises in Lake Itasca, MN, and flows generally southerly for 2,340 miles through the central portion of United States to empty into the Gulf of Mexico 115 miles below New Orleans. It is improved for barge navigation for 1,832 miles to Minneapolis, MN. The Mississippi River and its major tributaries, the Missouri, Ohio, St. Francis, White, Arkansas, Yazoo, and Red-Old Rivers, drain 1,245,000 square miles in all or part of 31 states between the Rocky and Appalachian Mountains and part of two Canadian provinces. Below Cape Girardeau, MO, 53 miles above Ohio River, river bottomlands widen abruptly into an alluvial valley of 35,460 square miles which was originally subjected to flood overflow. A major part of the alluvial valley has been protected from floods by levees which confine floodflows within a floodplain having an average width of 5 miles. (See map of alluvial valley of Mississippi River, scale 1:500,000.) Observations made by Mississippi River Commission to Sep. 30, 1982, show approximate all-time maximum and minimum discharges between levees as follows: Cairo to White River, 2,000,000 and 70,000 cubic feet per second; thence to Red River, 2,150,000 and 90,000 cubic feet per second; thence to the Gulf of Mexico, 1,500,000 and 50,000 cubic feet per second in Mississippi River and 660,000 and 11,000 cubic feet per second in Atchafalaya River. As the 1927 floodflow was not confined between levees, maximum discharges recorded do not include entire flow of the 1927 flood, maximum of record below White River. High water and flood stages usually occur in late winter or early spring, but great floods such as that of 1937 occurred as early as January. Low water stages generally prevail from August to December. Extreme all-time high in stages recorded at representative gages (rounded to nearest foot) are 60 feet at Cairo, 49 feet at Memphis, 61 feet at Red River Landing, and 21 feet at New Orleans (Carrollton). The river is nontidal above Red River Landing where tidal amplitude rarely exceeds 0.1 foot during extreme low water.

Previous projects. For details see page 1944, Annual Report for 1932.

Existing project. The Mississippi River and Tributaries Project in the alluvial valley between Head of Passes, LA, and Cape Girardeau, MO, provides protection from floods by means of levees, floodwalls,

floodways, reservoirs (in Yazoo and St. Francis Basins), bank stabilization, and channel improvements in and along the river and its tributaries and outlets insofar as affected by backwater of Mississippi River, including levee work on the main stem between Cape Girardeau and Rock Island. When completed, 23,621 square miles will be protected from the Mississippi River project flood. The project also provides for a 12- by 300-foot navigation channel between Baton Rouge, LA, and Cairo, IL; for salinity-control structures; and for channel realignment and improvement including bank stabilization and dikes to reduce flood heights, control natural tendency of river to lengthen by meandering, and protect levees from being destroyed by caving banks. Locations of major main stem Mississippi River improvements are shown in Table 41-A and those for off-main stem tributaries are shown in Table 41-B. Pertinent data on dams and lakes are shown in Table 41-C. Authorizing and incorporating legislation are shown in Tables 41-D and 41-E. Summary of presently estimated Federal cost of authorized improvements is shown in Table 41-F. Construction of the existing project began in 1928 and has continued throughout ensuing years. Through Sep. 30, 2001, physical completion of the entire project is 87.1 percent.

Recommended modifications. None.

Local cooperation. The Flood Control Act of 1928, as amended, applies. Such requirements have, in general, been complied with by local interests.

Terminal facilities. See Port Series No. 21, 1990, for Ports of Baton Rouge and Lake Charles, LA; Port Series No. 20, 1990, for Port of New Orleans, LA; also folio of Flood Control and Navigation Maps of Mississippi River from Cairo, IL, to the Gulf of Mexico (59th edition), 1992.

Project cost. Total allotted for flood control, excluding maintenance charges through Aug. 18, 1941, chargeable under authorizations to Sep. 30, 2001, was $7,102,470,322 (See Table 41-V.) (See also Tables 41-U, 41-W, and 41-X for additional financial statements.

The 359th Session was held on Nov. 27, 2000, at the Mississippi River Commission Headquarters in Vicksburg, MS. Approximately 10 people were in attendance for this meeting that was open to the public for observation but not for participation. The meeting was for the Commission's consideration of the Final Feasibility Report and Final Environmental Impact Statement for the Wolf River, Memphis, Tennessee, project.

The 360th Session was held on Apr. 2-6, 2001, on board the Motor Vessel *Mississippi* en route on the Mississippi River from Caruthersville, MO, to New Orleans, LA. Bank protection works, levees and channel conditions were observed en route. Public meetings were held at Caruthersville, MO; Helena, AR; Vicksburg, MS; and New Orleans, LA, with approximately 415 people in attendance. Commission members visited the Birds Point to Commerce levee restoration project and discussed the need for continued construction work in that area. They received briefings by Corps staff and local interests on the Thompson Bend area improvements in addition to the St. Johns-New Madrid project in Missouri. Visits were made to the White River area in Arkansas for briefings on groundwater depletion problems and discussions with farmers on flooding problems in that vicinity. A tour was also made of the South Delta area in Mississippi, with a trip to the Yazoo Backwater Pump/Steele Bayou structure site, Mahanna Wildlife Refuge, and the Delta Wildlife and Forestry facility. This session was adjourned in New Orleans, LA, Apr. 6, 2001.

The 361st Session was held Aug. 13-24, 2001, on board the Motor Vessel *Mississippi*. Public meetings were held at LaCrosse, WI; Keokuk, IA; St. Louis, MO; Memphis, TN; Greenville, MS; and Morgan City, LA, with approximately 685 people in attendance. Commission members were taken on project site visits in Minnesota to tour the Gilmore Creek 205 project and Winona flood control project in addition to a tour of the Environmental Management Program habitat project at Trempealeau. While in the Iowa area, the members participated in tours and briefings regarding Lock and Dam 12, the Bellevue Section 14 project, and the Bellevue State Park in addition to touring the Nahant Marsh and several riverfront areas. Mr. Dominic Izzo, Principal Deputy Assistant Secretary of the Army for Civil Works, joined the Commission during the inspection trip and participated with the members and staff in visiting the Sny Island Levee and the Twin Rivers Marine and Day Use Recreation Area within the St. Louis District. Briefings and overviews were also given on the Holnan Land Swap, Clarksville Refuge, and Melvin Price Locks and Dam River Center. During the second week of the inspection trip, several Commissioners and staff participated in a canoe trip on the Atchafalaya River with members of the Sierra Club and Senator Mary Landrieu. This session adjourned Aug. 24, 2001, in Morgan City, LA.

Records of Proceedings of all sessions of the Mississippi River Commission are on file in the office of the President.

Alluvial Valley Mapping

General. Contoured quadrangles and general maps of the alluvial valley are available for departmental use and public distribution under prescribed regulations. Preparation, revision, and publication of quadrangle maps (scale 1:62,500) continued. Roadmap-type information brochures of principal portions of the overall project were published along with pamphlets on the subject of flood control and navigation. Maps and supplemental data sheets for active works were updated and published as required.

The 1999, 4th edition of the folio of navigation maps (Scale 1:24,000) covering the Atchafalaya River system and outlets to the Gulf of Mexico was revised and printed in FY 99.

Approximately 210 flight-line miles of black-and-white aerial photography (various scales); 1,942.8 flight-line miles of color true photography; and about 46 hours of oblique photography were flown along the Mississippi River and tributaries in the New Orleans and Memphis Districts.

Work accomplished in the Districts: New Orleans District—The conversion of 1:62,500 scale quadrangle maps Barataria, Bayou Sale, Belle Isle, Black Bay, Fort Livingston, Lost Lake, Morgan City, Oyster Bayou, Point Au Fer and Pointe a Hache from manual to digital form were completed in FY 01.

Memphis District—There were no revisions to series conversion of U.S. Geological Survey in FY 2001. The White River Navigation Book was revised and completed on the 1999 aerial photos and was published by the Memphis District in FY 2001.

Vicksburg District—Series Published 1:62,500 scale quadrangle maps Lake Providence, LA-MS and Alsatia, LA-MS was completed in FY 00. Revision of Vicksburg, MS, LA is in progress. The conversion of 1:62,500 scale quadrangle map, Vicksburg, from manual to digital form will be completed in FY 02.

Floods

Streamflow observations during the fiscal year follow:

Memphis District—Mississippi River crest stage of 43.2 feet at Cairo gage on Mar. 1, 2000, and maximum discharge of 905,000 cubic feet per second occurred at Hickman, KY on Mar. 1, 2001, a crest stage of 26.3 feet at Memphis on Mar. 3-4, 2001, and a maximum discharge of 890,000 cubic feet per second at Memphis on Mar. 3-4, 2000.

Vicksburg District—The Mississippi River in the Vicksburg District - Peak stages and discharges on the Vicksburg District's reach of the Mississippi River were as follows: Arkansas City, 32.5 feet on Mar. 6, 2001, and maximum discharge of 1,175,000 cubic feet per second; Vicksburg, 39.9 feet on Mar. 8, 2001, and a maximum discharge of 1,220,000 cubic feet per second; and Natchez, 47.9 feet on Mar. 8, 2001, and maximum discharge of 1,171,000 cubic feet per second.

New Orleans District—On the Mississippi River, the Red River Landing gage recorded a maximum stage of 51.9 feet NGVD on Mar. 10, 2001, and the New Orleans gage recorded a maximum stage of 14.2 feet NGVD on Mar. 12, 2001. On the Atchafalaya River, the Simmesport gage recorded a maximum stage of 27.8 feet NGVD on Mar. 11, 2001.

Studies and Investigations

General investigations. Surveys and reports, authorized by laws and by Senate and House committee resolutions, were made as required. Collection and study of basic data continued.

A June 2000 resolution of the Committee on Transportation and Infrastructure of the U.S. House of Representatives authorized a study to determine if improvements in the vicinity of Bono, AR, in the interest of flood control, recreation, water quality, water supply, restoration of fish and wildlife habitat, and related purposes are advisable. An initial assessment was completed under the Section 205 Flood Control Act of 1948, Small Flood Control Projects. The assessment indicated that a combination flood control and recreational reservoir desired by local interest as being economically justifiable but it did not meet the policy guidelines of the Section 205 Authority.

A July 1997 resolution of the Committee on Transportation and Infrastructure of the U.S. House of Representatives authorized a study of flooding and other problems in the area west of the Atchafalaya Basin Floodway between Alexandria, Louisiana, and the Gulf of Mexico. A reconnaissance study was initiated in FY 1998 and completed in FY 1999.

A May 1998 resolution of the Committee on Transportation and Infrastructure of the U.S. House of Representatives authorized a study of flooding and other problems in the area between Bayou Lafourche and the Mississippi River from Donaldsonville,

Louisiana, to the Gulf of Mexico. A reconnaissance study was completed in FY 2000. Feasibility study will be initiated in FY 2002.

An April 1992 resolution of the Public Works and Transportation of the U.S. House of Representatives Committee authorized a study of flooding and other problems east of the Atchafalaya Basin Floodway between Morganza, Louisiana, and the Gulf of Mexico. A feasibility study was continued in FY 2000 and a draft feasibility report was prepared in Aug. 2000 recommending a Federal project. The Energy and Water Development Appropriation Act of 1995 and the Water Resources Development Act of 1996 directed an expedited study of a lock the Houma Navigation Canal under the authority of the Morganza, Louisiana, and the Gulf of Mexico study. An interim feasibility study on the lock was completed in FY 1997 and was approved for preconstruction engineering and design in FY 1999. A May 1998 resolution of the committee on Transportation and Infrastructure of the U.S. House of Representatives authorized a study of flooding and other problems in the area between Bayou Lafourche and the Mississippi River, from Donaldsonville to the Gulf of Mexico. A reconnaissance study was initiated in FY 99.

A June 1998 resolution of the Committee on Environment and Public Works of the U.S. Senate authorized a study of the multipurpose flood control and agricultural water supply problems in the Boeuf-Tensas Basin of southeast Arkansas. A feasibility study was initiated in FY 2000.

Mississippi River and Tributaries Levees

Operations and results during fiscal year. This feature consists of construction of new, and enlargement of existing, levees to approved grade and section; construction and restoration of levee berms; and construction, repair, and maintenance of roads on levees. Work accomplished is summarized in Table 41-N and further broken down as follows:

New Orleans District—Continued construction of levees in the Main Stem System.

Vicksburg District—Continued construction of levees in the Main Stem System. See Table 41-L.

Memphis District—Continued construction of levees in the Main Stem System. See Table 41-M.

Condition as of Sep. 30. (See Tables 41-K, 41-L, 41-M, and 41-N.) There are 1,609.8 miles of levees authorized for the Mississippi River below Cape Girardeau, of which 1,603.0 are in place with 1,360.7 built to approved grade and section. The Main Stem Levee System consists of 2,215.7 miles, of which 2,208.9 are in place with 1,901 miles completed to approved grade and section. Included in this system are 85.4 miles of levees and structures along the south bank of Arkansas River miles (all completed); 59.2 along the south bank of Red River (all completed); and 449.2 miles in the Atchafalaya River Basin, with 449.2 miles in place and 388.4 miles completed to grade and section (see Table 41-N). Of the authorized 677.8 miles of berms and seepage control measures, 562.6 are complete. Graveled or hard-surfaced roads have been constructed on 2,094.8 miles of these levees.

There are an additional 1,511.0 miles of authorized tributary levees in the MR&T Project, of which 1,265.6 miles, are in place with 1,058.5 to approved grade and section. Berms have been completed on 15.3 miles and 942.9 miles of graveled or hard-surfaced roads have been constructed on the levees.

For summary of levee work Table 41-N.

Mississippi River and Tributaries—Channel Improvements

Operations and results during fiscal year. Dredging: Mississippi River Main Stem—(See Table 41-G.) Work included dredging 23,683.1 cubic yards for maintenance of channel and harbor improvements. Minimum channel depth of 9 feet was maintained. Dredging was done with the following plant: Vicksburg District, channel maintenance was performed by government-owned dredge *Jadwin*. Memphis District channel maintenance dredging was performed by the Government-owned dustpan dredge *Hurley* and leased dust pan dredge *Wallace George*.

The MR&T Harbor maintained in Memphis District was Memphis Harbor (McKellar Lake), by leased cutterhead dredge *Pontchartrain*. MR&T Harbors maintained in Vicksburg District were Greenville Harbor and Vicksburg by cutterhead dredge Marion.

Bank revetment and dikes: (See Table 41-H, 41-I, and 41-J.) Construction of 2.65 miles of new bank revetment and 136,809 squares of concrete mattress, for maintenance, along the Mississippi River was completed by Government plant and hired labor. Also, 1.9 miles of new dikes were constructed and required maintenance was performed.

Approximately 1.09 miles of new bank revetment was constructed on the Atchafalaya River.

Other work performed in the interest of navigation, supplementing maintenance dredging on Mississippi River between Cairo, IL, and Baton Rouge, LA, included removal of snags, wrecks, and obstructions; issuance of bulletins by the Vicksburg District providing information on available high-water velocities at selected locations; maintenance of bulletin boards showing daily gage readings at regular MRC gages; and contact pilot service furnishing navigation interests with latest information and advice on channel conditions and navigation interests. Cost of this work is given in Table 41-U.

Condition as of Sep. 30. In carrying out authorized channel improvement program between Baton Rouge and Cairo, 16 cutoffs were developed between 1933 and 1942. These, combined with chute channel development and alignment improvements, decreased channel length between these cities by about 170 miles. However, current velocities increased the attack on the banks and the river began to regain its length. As a result, the net shortening between 1933 and 1962 was 114 miles of the theoretical 170-mile cutoff.

There are now in place 1,037.2 miles of operative bank revetment and 304.7 miles of dikes on the lower Mississippi River. This amount of channel stabilization should prevent the river from regaining much more of its length due to meandering. A navigation channel 9 by 300 feet is being accomplished by revetment and dikes and maintained by dredging as required during the low-water season. Due to growing effectiveness of channel improvement program, average maintenance dredging requirements are steadily being reduced, and an increase in navigable depth is being obtained. Approximately 142.0 miles of foreshore protection have been constructed along the lower Mississippi River.

There are 86.2 miles of revetment and 5.9 miles of dikes on tributary channels as listed in Tables 41-H, 41-I, and 41-J.

New Orleans District

ATCHAFALAYA BASIN, LA

Operations and results during fiscal year. New work by hired labor: Real estate activities and planning for construction were continued.

Construction of levee enlargements and floodwalls continued on the east and west protection levees, and levees west of Berwick.

In FY 01, two contracts were awarded: one for levee enlargement W46/64 and one for closure of a drainage structure (Wax Lake East Drainage Structure). Two other levee enlargement contracts were completed (W123 and E96/99).

Maintenance by hired labor: Operation and maintenance of Bayou Boeuf, Berwick, and Bayou Sorrel Locks, Morganza Control Structure, condition and operation studies, and water control management activities were continued.

Recreation: Several boat landing throughout the basin are currently under planning and design efforts with construction scheduled for FY 2002 at both Simmesport and Myette Pointe. Boat landings will consist of new lanes, improved parking, lighting, security facilities, improved access, comfort stations, and associated utilities. Planning has begun on Lake End Park to be located in Morgan City, LA, and is anticipated to include various types of public access recreational elements. Planning has also been initiated for a visitor center to be located in Morgan City, LA.

Condition as of Sep. 30. Construction was initiated Aug. 7, 1929, with commencement of the west protection levee from Bordelonville to Hamburg, LA. The project is 93 percent complete. The current estimated Federal cost is $1,790,000,000 and non-Federal cost is $8,000,000. Of the 449.2 miles of levees and floodwalls authorized for the Atchafalaya system, 388.4 miles are built to grade. See Table 41-K for status of levees.

Construction of the first 2.5 miles of the proposed 5 miles of channel was initiated in January 1958 and completed in July 1959, with 7,458,086 cubic yards excavated.

The remaining 2.5 miles were to be constructed when development of the initially constructed portion warrants expansion. Project expansion has not been necessary. Therefore, this feature was deauthorized on Nov. 2, 1979, under the provisions of Section 12, Public Law 93-251 (WRDA 74), as amended.

Major items remaining to be completed include completion of levees to grade and section, channel training works below Morgan City, modification of existing structures and construction of two freshwater

distribution structures. Approximately 54.7 miles of bank stabilization have been placed as shown in Table 41-H.

Flood Control

ATCHAFALAYA BASIN FLOODWAY SYSTEM, LA

Location. The project lies in the lower part of the Atchafalaya Basin which is situated in south-central Louisiana. It lies in parts of Iberville, Iberia, Point Coupee, St. Martin, St. Mary and St. Landry Parishes. Further, it is limited to the part of the Atchafalaya River Basin that has been confined between protection or guide levees that are about 15 miles apart. The northern boundary, west of the Atchafalaya River, lies along the south right-of-way line for the Union Pacific Railroad near the south side of U.S. Highway 190 between the West Atchafalaya Basin Protection Levee (WABPL) and the west limits of the Town of Krotz Springs, thence southerly along the west limits of the town and easterly along the south limits of the town to the Atchafalaya River; east of the Atchafalaya River it lies along the southern right-of-way line for the Union Pacific Railroad. The eastern and western boundaries lie at the floodside toes of the East Atchafalaya Basin Protection Levee (EABPL) and WABPL, respectively. The area within these limits has been calculated at about 595,000 acres.

Existing Project. This project consists of the acquisition of 50,000 acres of fee title, excluding minerals, from willing sellers and 338,000 acres of easements including: developmental control and environmental protection and in some cases flowage easements. All acquisition is over privately owned land. The state will provide its 150,000 acres of existing lands and also about 30,000 acres of land donated by the Dow Chemical Company to accomplish the project features. Other state and Federal lands in the project area include 15,000 acres acquired by the Department of Interior for the Atchafalaya National Wildlife Refuge and 12,000 acres acquired by the State for the Sherburne Wildlife Management Area. Additionally, the project includes features to protect and improve the environmental resources of the area and to provide for improved recreational use.

To date approximately 47,324 acres of fee and 144,000 acres of easements have been negotiated.

Local Cooperation: A Project Cooperation Agreement (PCA) is not required for the acquisition of flowage, developmental control and environmental protection easements nor for acquisition of the public access lands (fee). A PCA will be required for the Operations and Maintenance of water management units and the construction of O&M for Recreation features.

Water Management Units: Planning and design is currently underway for the Buffalo Cove water management unit. These efforts are based upon experience learned from implementing the Bayou Eugene prototype model test in 1995 and further refinements completed in early FY 2002. Construction is currently scheduled for early FY 2003 in the Buffalo Cove WMU under a programmatic implementation strategy entitled, "Adaptive Management." This strategy is anticipated to facilitate the implementation and operation and maintenance process. Planning is anticipated to begin for the Flat Lake area in mid FY 2003.

Operations and Results During Fiscal Year 01: During FY 01, more restrictive easements were negotiated over 7,000 acres. Approximately 10,469.42 acres of additional fee were negotiated in FY 01.

Condition as of Sep 30. In FY 01, approximately 7,000 acres of easements were negotiated and approximately 10,469.42 acres were purchased in fee from willing sellers.

BAYOU COCODRIE AND TRIBUTARIES, LA

Operations and results during fiscal year. Maintenance by hired labor consisted of water control management.

Condition as of Sep. 30. Construction was initiated in June 1946 and is 57 percent complete, based on the current estimated Federal cost of $20,400,000 and non-Federal cost of $323,000. See page 2031, Annual Report for 1961, for description of completed work.

Work required to complete the project consists of enlargement of 13.5 miles of upper Bayou Boeuf, channel improvement of 25.3 miles of Bayou Cocodrie, enlargement of Bayou Courtableau from Washington, LA, to the west protection levee, and additional culverts through the west protection levee at 100 percent Federal cost in lieu of the previously authorized diversion channel from Washington to the Bayou Courtableau drainage structure.

With the termination of the Eastern Rapides and South Central Avoyelles project, it has become necessary to provide an adequate outlet structure solely for the Bayou Cocodrie and Tributaries project. The

economic effects of this change along with current benefits estimates have caused the benefit-cost ratio for the project to be less than unity. As a result, the project has now been classified as inactive. If economic conditions change, the project could be reactivated.

BONNET CARRE' SPILLWAY, LA

Operations and results during fiscal year. Maintenance by hired labor: Condition and operation studies, water control management, and ordinary maintenance of the control structure and spillway continued.

Condition as of Sep. 30. Construction of the spillway was initiated in FY 1929. The control structure was completed in 1931, levees were completed in 1932, and utility crossings were completed in 1936. The cost of the completed work is $14,212,200.

It was necessary to operate the structure to reduce flood stages in 1937, 1945, 1950, 1973, 1975, 1979, 1983 and 1997. The structure was operated in 1994 to transfer fresh water from the Mississippi River to Lake Pontchartrain. The structure was operated for one month from March 17-April 17, 1997, to reduce flood stages.

Needle replacement began in FY 96 with the purchase of about 625 needles for $80,000. The total replacement quantity required is approximately 7,000. An additional cable security system has been installed through needle eyes to prevent needles from dislodging during severe storms.

Natural Resources and Recreation Project Master Plan was approved and implemented. Operational Management Plan is under development.

OLD RIVER, LA

Operations and results during fiscal year. Maintenance by hired labor consisted of operation and maintenance of the lock and control structures as required, condition and operation studies, water control management, maintenance of cleared areas, levee shaping, and engineering studies.

Natural Resources and Recreation Master Plan is under development. Operations and Maintenance Activity includes development of Old River Cooperative Visitor Center.

Condition as of Sep. 30. Construction began September 1955 and is complete at a Federal cost of $292,273,000. Principal items completed are as follows: Low-sill structure, June 1959; overbank structure, October 1959; auxiliary structure, September 1986; levees and levee enlargements, October 1963; inflow and outflow channels for the low-sill structure, February 1961; inflow and outflow channels for the auxiliary structure, August 1987; navigation lock completed December 1962 and opened to navigation March 1963, at which time Old River was closed to navigation with a rock and earthfill dam; highway approaches and bridge over the lock completed March 1965. Approximately 9.4 miles of bank protection have been constructed at the inflow and outflow channels. (See Table 41-H for details of bank protection.)

LOUISIANA STATE PENITENTIARY LEVEE, LOUISIANA

Location. The project is located near Angola, LA, in West Feliciana Parish, approximately 40 miles northwest of Baton Rouge, LA, and borders the Louisiana State Penitentiary along the Mississippi River and State of Mississippi state line.

Existing Project. The project provides for improving about 12 miles of existing levees along the Mississippi River which currently afford flood protection to the penitentiary on the left descending bank below Old River. The existing levees are owned and maintained by the State of Louisiana and are substandard with regard to Federal specifications. By improving the existing levees to Federal standards, the project will reduce the risk of flooding with its attendant property damage and threat to the lives of up to 5,100 inmates and about 1,750 employees and residents (527 reside on the penitentiary grounds). Funds to initiate preconstruction, engineering and design were appropriated in FY 91 and funds to initiate construction were appropriated in FY 98.

Local Cooperation. The limited Reevaluation Report was approved on July 2, 1999 and formed the basis for execution of the Project Cooperation Agreement which was approved on July 30, 1999. The local Sponsor, the Louisiana Department of Public Safety and Corrections has provided cash in the amount of $1,150,000 in addition to furnishing the lands and damages necessary to support their share of the project cost.

Conditions as of Sep. 30. Construction was initiated in FY 99 with the award of three contracts in Sep. 1999. Two contracts are for the levee upstream of Camp C and the other is for replacement of the existing drainage structure. All three contracts were completed in FY 01. Also, the final contract to enlarge the levee from Camp C to the main gate was awarded in Apr. 01.

The entire project is scheduled to be completed in FY 03.

Salinity Control Structures

MISSISSIPPI DELTA REGION, LA

CAERNARVON FRESHWATER DIVERSION STRUCTURE, BRAITHWATE, LA

Location. The Caernarvon structure is constructed in the Mississippi River Levee on the left descending bank at mile 81 AHP, just below the St. Bernard-Plaquemines Parish line.

Existing Project. The Caernarvon Freshwater Diversion Feature of the Miss. Delta Region Project is capable of diverting up to 8,000 cfs of River water into the Breton Sound Estuary for fish and wildlife habitat enhancement. River stages and the fresh water needs of the estuary, determined by monitoring data, establish the actual quantities to be diverted.

Local Cooperation. The Local Cooperation Agreement with the State of Louisiana was signed in June 1987. Cost sharing for initial construction and ongoing operations and maintenance is 75% Federal and 25% non-Federal. The project is operated and maintained by Plaquemines Parish, under the direction of the LA Department of Natural Resources.

Condition as of Sep. 30. Construction began in 1988 and was completed in 1991, at a Federal cost of $19,700,000 and a non-Federal cost of $6,500,000. Diversions have been ongoing, as needed, since August 1991. The goal of fish and wildlife habitat improvement has been met or exceeded, most notably in the areas of seed oyster availability on the public oyster grounds, a large variety and volume of recreational fishing and duck hunting.

DAVIS POND FRESHWATER DIVERSION STRUCTURE, LA

Location. The Davis Pond structure is under construction in the Mississippi River Levee on the right descending bank at mile 118 AHP, in St. Charles Parish, two miles Luling, LA.

Existing Project. The Davis Pond Freshwater Diversion Feature of the Miss. Delta Region Project will be capable of diverting up to 10,650 cfs of River water into the Barataria Bay Estuary for fish and wildlife habitat enhancement. Fresh water needs of the estuary, determined by monitoring data, will establish the actual quantities diverted.

Local Cooperation. The Project Cooperation Agreement was signed in April 1993 with the State of Louisiana. Cost sharing for initial construction and ongoing operations and maintenance is 75% Federal and 25% non-Federal. The project will be operated and maintained by St. Charles Parish, under the direction of the LA Department of Natural Resources.

Condition as of Sep. 30. Of the eight construction contracts to be completed before diversions will commence, seven are complete. One contract is underway, and should be completed in Jan. 2002. The Davis Pond feature is scheduled to be capable of diverting River water in CY 2002, if the need exists. Final construction and ongoing monitoring under the construction phase of this feature will continue into 2005. Estimated total first cost is $143,000,000. The estimated Federal share is $107,200,000 and the estimated non-Federal share is $35,800,000.

New Orleans District

MISSISSIPPI - LOUISIANA ESTUARINE AREAS, LA/MS

BONNET CARRE' FRESHWATER DIVERSION STRUCTURE, LA

Location. The Bonnet Carre' structure will be constructed in the upstream end of the Bonnet Carre Spillway structure, on the left descending bank of the Mississippi River at Mile 129 AHP, in St. Charles Parish, LA.

Existing Project. The Bonnet Carre Project will be capable of diverting up to 30,000 cfs of River water into the Lake Pontchartrain, Lake Borgne/Biloxi Marsh Estuarine Area for fish and wildlife habitat enhancement. Fresh water needs of the area, determined by monitoring data, will establish actual diversion quantities.

Condition as of Sep. 30. Before construction can proceed, a Project Cooperation Agreement must be signed with the States of Louisiana and Mississippi. Louisiana has withdrawn their support of the project until agreement between Louisiana and Mississippi can be reached on how the project will be operated. Federal cost of the Project is estimated to be $80,200,000. The construction, operation and maintenance of the Project will be shared as follows: Federal, 75 percent; La, 20 percent; MS, 5 percent.

Vicksburg District

LOWER ARKANSAS BASIN, AR

Condition as of Sep. 30. Arkansas River levees. A total of 56.2 miles of the 61.5 miles of north bank levees and all of the 85.4 miles of south bank levees have been completed to approved grade and section. These levees above mile 36.1 are protected by bank-protection works constructed as a feature of project for Arkansas River and tributaries, AR and OK. For present status of this work, see report of Little Rock District. Below mile 36.1, needed bank protection is constructed with project maintenance funds. Little Bayou Meto gates and lifting mechanism were replaced during FY 88. Big Bayou Meto Gate operating mechanisms replaced FY 94, 95, 96.

LOWER RED RIVER SOUTH BANK RED RIVER LEVEES, LA

Operations and results during fiscal year. New work by hired labor consisted of engineering studies. A Project Management Plan to address replacement of the drainage structure and pumping plant was approved in Aug 94. A major maintenance report was prepared and approved Sep. 95 recommending replacement of the drainage structure. Design of the replacement structure is complete. Construction is underway and scheduled for completion in March 2003.

Maintenance by hired labor consisted of water control management and economic studies.

Condition as of Sep. 30. Construction was initiated in FY 92 and is complete. All of the 59.2 miles of levees authorized are completed to approved grade and section.

TENSAS BASIN, AR AND LA

(a) **Boeuf and Tensas Rivers, and Bayou Macon, AR and LA.**

Operations and results during fiscal year. Planning and design on project features are complete. The Lake Chicot Pumping Plant and related features are complete and in operation. No further work on the Tensas River Project (Separable Element) will be initiated due to lack of commitment from a local sponsor to cost share remaining E&D and construction. This project has been placed in the "inactive" category.

Condition as of Sep. 30. Channel improvement has been accomplished on 741.7 miles of project streams, providing major drainage outlets for the tributary areas. Additionally, 61.0 miles of the Tensas River has been cleared and snagged. The GDM for the Tensas River Project, above mile 61, including Mill Bayou-Bayou Vidal is complete. However, no further work will be initiated due to lack of a local sponsor.

(b) **Red River backwater area.**

Operations and results during fiscal year. Planning and design continued on project features. All channel work required to get flows to the Tensas Cocodrie Pumping Plant and gravity structure is complete. The gravity structure and the pumping plant are complete and are being operated and maintained by contract. One mitigation item, the construction of two water control weirs, was completed in May 1988. Contracts for three additional mitigation features are complete. Construction of the Durham Prong mitigation feature is complete. Tensas-Cocodrie, Item 4-A, levee enlargement, 6.3 miles in length, was completed in September 1988, and Item 4-B, 2.4 miles of levee enlargement, was completed in October 1990. A contract for Item 2 was awarded in January 1991 and is physically complete. These contracts will complete the levee enlargement for all of the levee system, except 0.8 miles.

Work on the Below Red River Phase II GDM has been reclassified as inactive. Design and construction of the Sicily Island Area Levee project is underway.

Condition as of Sep. 30. Levees in Tensas-Cocodrie area are complete except for levee raising of 0.8 miles. The work comprised 93.1 miles of new levee, excluding 2.1 miles of high ground where no levees are required, and 86.9 miles of gravel road on levees. Construction of 63.4 miles of levee, Larto Lake to Jonesville levee system, has been completed. A levee grade reevaluation study for all levee systems in the Red River Backwater area was completed in Mar. 1985. Levee work on Sicily Island area consists of 56 miles of new levee, 2 pumping plants, 11 miles of channel work, and structural mitigation features. Levee items 1A, 1B, 3A, 4A, 4B, 5A-R, 5B, Bayou Louis weir and connecting channel, and the Fool River Pump Plant are complete. Construction of Levee Items 1E, 2A, 2B and 3B, and the Haha Bayou Pump Plant are underway.

YAZOO BASIN, MS

Operations and results during fiscal year.

(a) **Big Sunflower River, etc.** The Project is authorized by the Flood Control Acts of 1944, 1946, 1950, 1962, and 1965. Construction of channel improvements on Steele Bayou are underway.

Construction on Steele Bayou Channel in the Swan Lake Area is being done in phases. Phase V was awarded in July 01. Main Canal and Black Bayou are complete.

Mitigation for Upper Steele Projects

Mitigation for the environmental losses is now underway. Approximately 2,729 acres of cleared lands have been obtained in the Yazoo Basin to mitigate the wildlife losses resulting from construction of the Upper Steele Bayou Projects. This land has been reforested and will be managed for aquatic, wetlands, and waterfowl. A total of 5,250 acres of mitigation will be required for this project.

(b) **Flood Control Reservoirs**

(1) **Arkabutla Lake.** (See Table 41-C.) The dam and appurtenant structures were maintained and operated. Clearing of tributary streams in the lake area was continued. Maximum pool elevation in the lake was 227.8 feet NGVD on Feb. 21, 2001, and storage in flood control pool was 248,000 acre-feet. Peak 24-hour inflow was 30,500 cubic feet per second on Feb. 17, 2001. On Sep. 30, 2001, the pool elevation was 218.0 feet NGVD, and storage in the flood control pool was 98,900 acre-feet.

(2) **Enid Lake.** (See Table 41-C.) The dam and appurtenant structures were maintained and operated. Rehabilitation of boat channels and snagging and clearing of tributary streams in the lake area continued. Maximum pool elevation in the lake was 253.5 feet NGVD on Jun. 13, 2001, when storage in the flood control pool was 330,400 acre-feet. Peak 24-hour inflow was 26,000 cubic feet per second on Feb. 17, 2001. On Sep. 30, 2001, pool elevation was 242.5 feet NGVD and storage in the flood control pool was 166,700 acre-feet. 4,500 ac. ft. of storage in conservation pool was reallocated to municipal and industrial water supply in June 1998.

(3) **Grenada Lake.** (See Table 41-C.) Construction of remaining public-use facilities has been deferred pending development of cost-sharing agreements with local interests for construction and non-Federal operation and maintenance, consistent with projects for which recreation facilities are being constructed under the provisions of the Federal Water Project Recreational Act of 1965 (Public Law 89-72), as amended. Maximum pool elevation in the lake was 215.9 feet NGVD on Jul. 2, 2001, when storage in the flood control pool was 582,200 acre-feet. Peak 24-hour inflow was 57,100 cubic feet per second on Jan. 20, 2001. On Sep. 30, 2001, the pool elevation was 207.6 feet NGVD and storage in the flood control pool was 325,100 acre-feet.

(4) **Sardis Lake** (See Table 41-C.) The dam and appurtenant structures were maintained and operated. Clearing of tributary streams in the lake area continued. Maximum pool elevation in the lake was 262.2 feet NGVD on Jun. 14, 2001, when storage in the flood control pool was 684,400 acre-feet. Peak 24-hour inflow was 33,700 cubic feet per second on Feb. 17, 2001. On Sep. 30, 2001, the pool elevation was 253.1 feet NGVD and storage in the flood control pool was 411,500 acre-feet. A construction contract was awarded for the seismic remediation of Sardis Dam utilizing driven pre-stressed concrete piling as a result of an extensive study and evaluation of the expected performance of the dam during a major earthquake in the New Madrid earthquake zone of the central United States.

(c) **Greenwood, Yazoo City and Belzoni protection works.** Contract forces continued operation and maintenance of levees, drainage facilities, and pumping plant.

(d) **Main stem.** Contract forces continued operation and maintenance of channels, levees, and drainage facilities.

(e) **Mississippi Delta, MS.** Feasibility studies limited solely to flood control problems in the Big Sunflower River Basin, are complete. No economically feasible projects were identified. A negative feasibility report was forwarded to the Mississippi River Commission in September 1997.

(f) **Reformulation Study.** The uncompleted portions of the Yazoo Basin construction program are being reformulated. This reformulation study includes investigations of the engineering, economic, and environmental aspects of the basin and is being accomplished in 4 phases. These studies will evaluate reasonable arrays of alternatives to the project features that remained after construction of items that were budgeted and scheduled for award in FY 90. The Upper Steele Bayou and Upper Yazoo Project reports were approved on May 25, 1993 and Jun. 21, 1994, respectively. Concerning the final 2 phases, the Yazoo Backwater Reformulation Study began in FY 93 and the Tributaries Reformulation study began in FY 95. The Backwater Study includes nonstructural, structural, and combination plans. Nonstructural features include conservation and water management easements and reforesting of cleared agricultural lands. Structural features include an array of various capacity pumping stations and a levee alternative. A draft report was

released for public review in Sep 2000 with a final report scheduled in FY 02. The Yazoo Tributaries Reformulation Study is evaluating flood control requirements on nine project features. Study efforts were suspended in 2000 until construction advances in the Upper Yazoo projects.

(g) **Demonstration Erosion Control.**

The Demonstration Erosion Control Project (DEC), a joint project with the USDA NRCS was initiated by FY 85 appropriations as a continuation on streambank erosion control efforts. The purpose of the project is to demonstrate the applicability of a systems approach to the design of erosion, sedimentation, and flood control works by applying this approach to 16 demonstration watersheds in the Yazoo Basin hill area. During FY 01, work continued in the DEC toward development of the systems plans and implementation of a monitoring program. Cumulative through FY 01, the District has completed the construction of 190 low drop grade control structures, 185 miles of bank stabilization, 15 miles of channel improvement, 25 box culverts, 5 high drop grade control structures, 1,160 riser pipe grade control structures, 6 floodwater retarding structures, and 9 miles of levees.

(h) **Tributaries.** Construction:

(1) **Bank Stabilization.** Three bank stabilization items located on the Tallahatchie and Yalobusha Rivers were awarded in FY 94. The work was completed in FY 95.

(2) **Channels.** Construction of the Alligator-Catfish, Round Lake Water Control Structure was completed Nov. 28, 1989. Construction on the remaining channel work on the Ascalmore-Tippo Project is complete. Contract forces continued operation and maintenance of channels, levees, and drainage facilities.

(3) **Levees.** Levee work associated with the last item of work on Ascalmore-Tippo Project is complete. Levee work associated with Pelucia Creek is complete.

(i) **Upper Yazoo Projects.** The first 12 items of channel improvement, approximately 81 miles, and nine drainage structures have been completed. This work extends from Yazoo City, Mississippi, to about 6 miles downstream of Greenwood, Mississippi.

The Fort Pemberton Flood Control Structure was completed on Apr. 29, 1991.

Roebuck Lake and Fort Loring water control structures and Tchula Lake weirs were completed in FY 95.

Item 3A-2 levee was completed in FY 94. Channel Item 3A-1 was completed in FY 96. Item 3A-2 channel work was completed in FY 97. This item contains the first thin layer disposal site. Channel Item 3B-1 was completed in FY 99. Channel Item 3B-2 was completed in FY 00. Channel Item 4A was completed in FY 01. Channel Item 4B was awarded in FY 01 and is scheduled for completion in FY 02.

Design efforts for Channel Item 5 are underway. Item 5A is scheduled for award in May 02 and Item 5B for Aug 02.

The Alligator-Catfish water control structure was completed in FY 98. This structure has been renamed the J. Tol Thomas Water Control Structure.

Mitigation for Upper Yazoo Projects. Mitigation for the environmental impacts is now underway. Approximately 8,460 acres of cleared, frequently flooded lands have been obtained in the Yazoo Basin area of Mississippi to mitigate the wildlife losses resulting from construction of the Upper Yazoo Projects, Big Sand Creek, Pelucia Creek, and Ascalmore-Dippo Bayou. This land has been reforested and will be managed for terrestrial aquatic, wetlands, and water fowl. A total of 17,000 acres of mitigation will be required for this projects.

(j) **Yazoo Basin backwater.** The Yazoo area backwater levees are complete, including the backwater levee from the Mississippi River levee to the west levee of the lower Auxiliary Channel, the Little Sunflower River drainage structure, and the connecting channel from the Steele Bayou drainage structure to the Big Sunflower River.

The Satartia area backwater levee is complete. Rocky Bayou area levee Items lA and 1B have been completed. Completed backwater levees will require raising to provide the degree of protection intended based on the project design flow line developed for the Mississippi River following the 1973 flood.

Four Greentree Reservoirs and pumping stations have been constructed to mitigate for the waterfowl impacts of the project.

Mitigation of the terrestrial impacts is now underway. Approximately 8,800 acres of cleared, frequently flooded, agricultural lands have been obtained in the Yazoo Backwater area of Mississippi to mitigate the wildlife losses resulting from construction and operation of the Yazoo Area and Satartia Area levees projects. This land has been reforested and will be managed for terrestrial wildlife. An additional 3,617 acres of mitigation is being considered as part of the Yazoo Backwater Reformulation Project.

Condition as of Sep. 30. The first feature of Yazoo Basin project was started in 1936, and the total project is about 65 percent complete.

Memphis District

CACHE BASIN, AR

Operations and results during fiscal year. No contracts were awarded or completed during the fiscal year.

Condition as of Sep. 30. Project was initiated during 1972 and is 4 percent complete. Construction of the authorized project was stopped in 1978 due to environmental opposition. Reevaluation studies of the authorized plan were initiated in June 1987 to provide a more environmentally balanced plan. The reevaluation effort was terminated on Dec. 15, 1994, due to a lack of local sponsorship. The Memphis District has initiated action to turn the acquired mitigation lands (7,959 acres) over to the U.S. Department of Interior.

CONSTRUCTION GENERAL

FRANCIS BLAND FLOODWAY DITCH (EIGHT MILE CREEK), ARKANSAS

Location. The project is located in the City of Paragould, AR.

Existing Project. The existing project consist of 12.5 miles of channel improvements. Eight miles of channel enlargement will occur in the rural downstream area of Paragould. Three and a half miles of enlargement will occur in the City of Paragould along with one mile of channel riprap/stabilization. The project will provide 100 year flood protection within the City of Paragould.

Local Cooperation. A project Cooperation Agreement (PCA) was assigned in June 1996.

Conditions as of Sep. 30. The contract work on the rural eight miles of channel has been completed. The City of Paragould continues to work to provide PCA requirements (lands, relocation, etc.) for the work within the city.

HELENA AND VICINITY, AR

Location. The project is located in the City of Helena, AR.

Existing Project. The existing project consists of 1.41 miles of earthen and concrete channel enlargement within the city limits of Helena, AR. The concrete channel will be constructed primarily under streets while the earthen channel is in an undeveloped section of the city.

Local Cooperation. The Project Cooperation Agreement (PCA) was signed in August 1997.

Conditions as of Sep. 30. Construction contract awarded Aug. 30, 2001.

HICKMAN BLUFF, KY

Operations and results during fiscal year. No contracts were awarded or completed during the fiscal year.

Location. The Hickman Bluff project is located in extreme southwestern Kentucky approximately one mile from the Mississippi River.

Condition as of Sep. 30. Project construction was initiated during 1995 and completed in August 2000.

HORN LAKE CREEK AND TRIBUTARIES INCLUDING COW PEN CREEK, TENNESSEE AND MISSISSIPPI

Location. Horn Lake Creek is located in northwest Desoto County, MS and southwest Shelby County, TN.

Existing project. The project was approved for construction on Nov. 17, 1986, under authority of Title IV, Section 401 of the 1986 Water Resources Development Act. The project consists of 3.5 miles of drift removal and 2.75 miles of channel clearing on Horn Lake Creek; 2.1 miles of channel clearing on Rocky Creek and 0.62 miles of channel clearing and 1.85 miles of channel enlargement on Cow Pen Creek. The project will provide 1.1-year flood frequency protection on Horn Lake and Rocky Creeks and 25-year flood frequency protection on Cow Pen Creek. The construction is complete.

Local Cooperation. A Local Cooperation Agreement was executed with the Horn Lake Creek Watershed Drainage District on Feb. 26, 1992.

Condition as of Sep. 30. The final contract for work on Cow Pen Creek was awarded in September 1997 and was completed in Sept. 1998. Floodplain mapping revisions are scheduled for completion in Feb. 2002.

HORN LAKE CREEK AND TRIBUTARIES, TENNESSEE AND MISSISSIPPI

Location. Horn Lake Creek is located in northwest Desoto County, MS, and southwest Shelby County, TN.

Existing project. A limited reevaluation report of the project for flood control, Horn Lake Creek and Tributaries, Tennessee and Mississippi, authorized by Section 401(a) of the Water Resources Development Act of 1986, to determine the feasibility of modifying the project to provide urban flood protection along Horn Lake Creek.

Local Cooperation. A Design Agreement for a reevaluation study was executed with the Horn Lake Creek Drainage District on Oct. 5, 2001.

Condition as of Sep. 30. Reevaluation studies were initiated in Oct. 2001 and scheduled for completion in Feb. 2004.

LOWER WHITE RIVER

Operations and results during fiscal year.

(a) **Augusta to Clarendon Levee.** There were no contracts awarded or completed during the fiscal year.

(b) **Clarendon Levee.** There were no contracts awarded or completed during the fiscal year.

(c) **White River Backwater Levee-Hudson's Landing to MRL.** Awarded Levee Stabilization Miles 35/36 on Oct. 30, 2001.

(d) **White River Navigation.** Annual dredging and snagging contract awarded on Apr. 25, 2001.

Condition as of Sep. 30.

(a) **Augusta to Clarendon Levee.** Project was initiated during 1946 and is 39 percent complete. There were no contracts awarded or completed this fiscal year.

(b) **Clarendon Levee.** There were no contracts awarded this year.

(c) **White River Backwater Levee.** Initiated and completed Slope Stabilization, Lime-Flyash, Levee Miles 35/36, AR.

(d) **White River Navigation.** Dredging contract completed Nov. 2001.

NONCONNAH CREEK, MS AND TN

Operations and results during fiscal year. No contracts awarded during this fiscal year.

Condition as of Sep. 30. Project construction was initiated during 1990 and is 60 percent complete. Item 1, channel awarded Apr. 27, 2000, completed Jan. 8, 2001.

MISSISSIPPI RIVER LEVEES

Operations and results during fiscal year. Minor maintenance on levees is performed by the local interests and major maintenance is performed as required for slide repairs, road rehabilitation, and other similar work by the U.S. Army Corps of Engineers.

Mississippi River Levees Construction. Caruthersville, MO, relief wells, awarded Sep. 21, 2001, is 10 percent complete. Hillhouse, MS, relief wells, awarded Aug. 17, 2001, is 10 percent complete. Blue Lake. AR, relief wells, awarded Aug. 21, 2001, is 10 percent complete. Harmon Sewer, MO, culvert replacement, Aug 9, 2001, not started.

Mississippi River Levees Maintenance. Initiated and completed Delivery Orders or Hired Labor for Slide Repairs, Stovall and Flower Lake, MS; and Slide Repairs, Birds Point New Madrid Setback Levee, MO. Continued contracts for Slope Restoration, West Memphis, AR; Culvert Replacement, Kilgore, Cairo, IL; Culvert Replacement, Helena, AR. Culvert Replacement, Hwy 21, TN, and awarded a contract for Culvert Replacement, New Madrid, Sta. 0/22, MO. Initiated and completed contracts for Gravel Yazoo Parcel I, MS; and Gravel Yazoo Parcel II, MS.

Channel Improvement. Stone Dike Construction at Wolf Island, KY, awarded Jun. 30, 2000, completed Apr. 2001. Lookout point, TN-AR Dike Construction, awarded Jul. 2001, 70 percent complete. Cat Island, AR, Dike Construction awarded Aug. 2001, 90 percent complete. Big Island, AR, Bendway Weir construction, awarded Jul. 2001, 60 percent complete. Randolph,

TN, Construction Dredging awarded May 2001, completed in FY 2001.

REELFOOT LAKE - LAKE NO. 9, TN AND KY

Operations and results during fiscal year. No contracts awarded or completed during this fiscal year.

Condition as of Sep. 30. Project was initiated during 1974 and is 95 percent complete.

ST. FRANCIS BASIN, AR AND MO

Operations and results during fiscal year. Completed contracts for Culvert Replacement, Ditch 56, AR; Scour Repair, Turkey Roost, AR; Scour Repair, Huxtable Outlet Channel, AR; Channel Cleanout, Ditch 251 Upper, MO; and Channel Cleanout Mayo Ditch, AR. Completed Delivery Order or Hired Labor work for Channel Clearing, State Line Ditch 29, AR; Scour Repair, Ditch 9, AR; Scour Repair. Big Lake Floodway Bridge, AR; and Levee Slide Repairs, Mile 121, Below Huxtable, AR. Continued contracts for Channel Cleanout, Below Highway 90, AR. Initiated contracts and Delivery Orders for Roof Repair, Huxtable PP, AR; Channel Cleanout, Lower Buffalo Ditch, AR; Scour Repair, Mingo Bridges, MO; and Scour Repair, Fisk, MO. Ditch 10, AR, Culvert Replacement awarded May 7, 2001, 90 percent complete.

Ditch 1 and 6, bridges, Miles 1.21 and 2.95 awarded Sep. 7, 1999, is complete. Main and ditch 2, Item 2, Channel Enlargement, awarded May 30, 2000, 95 percent complete. Ditches 21A and 21B, culverts, initiated Jul. 31, 2000, is complete. Big Lake Floodway Ditch, bridge below Highway 18, awarded Sep. 15, 2000, is complete. Highway 90, channel restoration, awarded Sep. 12, 2000, 95 percent complete. Ditch 1 and 6 Channel Enlargement, MO, awarded Sep. 20, 2001, 2 percent complete.

Condition as of Sep. 30. Project initiated 1937. Project is 90 percent complete.

ST. JOHNS BAYOU AND NEW MADRID FLOODWAY

Operations and results during fiscal year. Construction of the first item of work (4.3 miles of vegetative clearing) was completed in Oct. 97. NEPA coordination activities continue for remaining items for work.

Condition as of Sep. 30. Construction on remaining items cannot be initiated until NEPA processing is completed. Remaining construction work on the First Phase include approximately 23.3 miles of channel improvements and two pumping stations. Work scheduled this summer after compliance with NEPA and receipt of rights-of-way from locals includes initiating a channel enlargement item and work on the New Madrid Pumping Station.

WEST KENTUCKY TRIBUTARIES, KY

Operations and results during fiscal year. No contract awarded or completed during fiscal year.

Condition as of Sep. 30. Project was initiated during 1978 and is 4 percent complete. Project is currently inactive due to lack of local support; however, locals have formally requested assistance in developing an environmentally sensitive plan of improvement. A preliminary time and cost estimate for a general reevaluation have been prepared.

WEST TENNESSEE TRIBUTARIES, TN

Operations and results during fiscal year.

(a) **Forked Deer River and principal tributaries, TN.** Forked Deer River channel improvement is 14 percent complete.

(b) **Obion River and principal tributaries, TN.** Obion Rivers channel improvement is 68 percent complete.

(c) **Riprap Protection at four sites Dyer, Crockett, Haywood, and Lauderdale** awarded Aug. 29, 1996, is complete.

Riprap protection at 3 sites Dyer, Crockett, and Lauderdale counties awarded on Aug. 10, 1998, and was completed Aug. 18, 1999. Shutdown plan control structures at 3 sites, Dyer and Lauderdale counties awarded on Aug. 3, 1998, was completed Sep. 1999.

Condition as of Sep. 30. West Tennessee Tributaries Project is 60 percent complete.

WHITEMAN'S CREEK, ARKANSAS

Location. The project is located in the city of Jonesboro, AR.

Existing project. The project was authorized for construction by the Water Resources Development Act of 1992, on Oct. 31, 1992. The project consists of 6.1 miles of channel improvements on Whiteman's, Turtle, Moore's and Higginbottom Creeks. The improvements provide 10-year level of flood protection along Whiteman's, Turtle and Moore's and 25-year protection on Higginbottom.

Local cooperation. A Project Cooperation Agreement (PCA) was executed May 31, 1996.

Conditions as of Sep. 30. Preparing project closeout.

TABLE 41-A MISSISSIPPI RIVER IMPROVEMENTS

Mileage Above Head of Passes	Locality	Improvement	Remarks
0-957[1]	Head of Passes, LA-Cairo, IL	Dredging, revetment, and contract work	--
10-81	The Jump-New Orleans, LA	Main line levee, right bank	--
11-25	Baptiste Collette-Bayou Ostrica, LA	Local levees, left bank	--
118	Davis Pond, LA (formerly Myrtle Grove, LA)	Salinity control structure, right bank	Authorized by Public Law 89-298 (HD 308/74/1). Included in MS Delta Region, LA feature. Postauthorization change report, approved June 1987.
81	Caernarvon, LA	Salinity control structure, left bank	Authorized by Public Law 89-298 (HD 308/74/1). Included in MS Delta Region, LA feature.
44-91	Bohemia, LA-New Orleans, LA	Main line levee and floodwall, left bank	--
81-96	New Orleans, LA	Main line levee, right bank	Authorized by Public Law 81-516.
91-104	New Orleans, LA	Main line levee and floodwall, left bank	Authorized by Public Law 81-516.
96-279	New Orleans-Morganza, LA	Main line levee, right bank	--
104-234	New Orleans-Baton Rouge, LA	Main line levee, left bank	--
127-129	Bonnet Carre' Floodway, LA	Regulating spillway, left bank	--
129	Mississippi-Louisiana Estuarine Areas, LA/MS (Bonnet Carre')	Salinity control structure, left bank	Authorized by Public Public Law 100-676
129-234	Bonnet Carre'-Baton Rouge, LA	Main line levee, left bank	--
235	Baton Rouge Harbor	Devils Swamp barge channel	Modified by Public Law 87-874.
279-287	Morganza Floodway, LA	Regulating spillway, right bank	--
287-303	Morganza-Old River, LA	Main line levee, right bank	Extends up south bank of Old River to Barbre Landing.
303-314	Old River, LA control	Levee closure and enlargement, low and high water spillway structures, navigation lock, and approach channels, right bank	Authorized by Public Law 83-780.
314-572	Old River-Cypress Creek, AR	Main line levee, right bank	Joins Arkansas River, south bank levee.
437	Vicksburg Harbor, MS	Harbor extension and industrial fill	Authorized by Public Law 70-391. Modified by Public Laws 79-526 and 83-780.
437-721	Vicksburg-Lake View, MS	Main line levee, left bank	--

TABLE 41-A (Continued) MISSISSIPPI RIVER IMPROVEMENTS

Mileage Above Head of Passes	Locality	Improvement	Remarks
490	Wilson Point, LA	Pumping Plant and drainage structure, right bank	Unpublished Vicksburg District's MRC report approved Apr. 14, 1966.[2]
537	Greenville Harbor, MS	Harbor improvements and port area	Authorized by Public Law 85-500.
646	Long Lake, Helena, AR	Culvert and floodgate, right bank	Authorized by Public Law 79-526.[2]
605-666	Henrico-Helena, AR	Main line levee and floodwall, right bank	--
672-993	St. Francis River-Commerce, MO[3]	Main line levee, right bank	--
722-725	Industrial levee (Ensley Bottoms)	Levee and pumping station	--
721-734	Memphis Harbor, TN	Closure of Tennessee Chute, industrial fill, levee, harbor channels, etc.	Authorized by Public Law 79-526.
803-873	Tiptonville-Obion River	Main line levee, left bank, levee extension, and diversion Obion River	Modified by Acts of Jul. 24, 1946 and Dec. 23, 1971.
857	Near Mud Lake, TN	Pumping station and adjacent channel improvements	Authorized Dec. 15 and 17, 1970 under Sec. 201 of Oct. 27, 1965 FC Act.
890	St. Johns Bayou, MO	Drainage floodgate and levee closure	Modified by Jul. 24, 1946 Act.
890	New Madrid Floodway, MO	Drainage floodgate and levee closure	Modified by Sep. 3, 1954 Act.
890-954	New Madrid-Birds Point, MO	Floodway, right bank	--
902-922	Slough Bend, Hickman, KY	Main line levee, left bank	--
922	Hickman, KY	Floodwall, left bank	--
946	Peafield, MO	Drainage floodgate	Authorized by Sep. 3, 1954 Act.
957[1]	Cairo, Cairo drainage	Floodwalls and levees district	--
957[1]	Cairo, Cairo drainage district, Mounds, Mound City, and vicinity	Floodwalls, levees, and pumping plant	--
	Thebes-Rock Island, IL	Levees, both banks	Intermittent (Sec. 6).
	Cape Girardeau, MO, to Rock Island, IL	Levees	Intermittent (Sec. 6).

1. Cairo, IL, is on Ohio River about 3 miles above its mouth (Mississippi River mile 954 AHP).
2. Also see Table 41-D, "Authorizing Legislation."
3. Commerce, MO, is on Upper Mississippi River, 39 miles above mouth of Ohio River.

TABLE 41-B MISSISSIPPI RIVER TRIBUTARY AND OUTLET IMPROVEMENTS

Mileage Below Head of Atchafalaya River	Locality	Improvement	Remarks
	ATCHAFALAYA BASIN, LA[1]		
	Atchafalaya Basin, Morganza and West Atchafalaya Floodways		
0-54	West Atchafalaya Floodway between Red River and Alabama Bayou	Floodway	--
27-54	Morganza Floodway between Mississippi River and Alabama Bayou	Floodway	--
54-117	Atchafalaya Basin Floodway between Alabama Bayou and Morgan City	Floodway	--
	East protection levee (Morganza and Atchafalaya Floodways)		
20-27	Lacour-Red Cross	Levee, upper Morganza guide	--
25-117	Morganza-Morgan City	Levee and Morgan City floodwall	Including lower Morganza Floodway guide levee.
27	Bayou Latenache	Drainage structure, Pointe Coupee, and channel enlargement	Through upper Morganza guide levee and enlargement of outlet channel.
0-27	Upper Pointe Coupee Loop area	Additional drainage facilities	Enlargement of Bayou Latenache. Approved Jun. 4, 1970. See Table 41-D.
31-57	Bayou Fordoche-Ramah	Drainage channel	Levee landside borrow pit.
80	Bayou Sorrel[1]	Lock	Alternate route, Gulf Intracoastal Waterway, Port Allen to Morgan City.
53-117	Bayou Sorrel Lock-Morgan City	Alternate navigation channel. Gulf Intracoastal Waterway	Gulf Intracoastal Waterway utilizes levee west side borrow pit channel.
117	Morgan City	Lock in Bayou Boeuf[1]	Gulf Intracoastal Waterway.
117-129	Below Morgan City	Channel relocation	Bypass route for Gulf Intracoastal Waterway.
117-129	Below Morgan City	Levee, floodwall	East of lower river.
	Atchafalaya Basin Floodway lower protection levee		
105	Calumet	Floodgate, east	Bayou Teche-Wax Lake Outlet.
105-120	Below Morgan City	Levees, floodwall, drainage structures, and pumping plants	Enclosed area between Wax Lake Lake Outlet and Berwick.
115	Berwick[1]	Lock	Lower Atchafalaya River.
116	Patterson	Water system	Adjustment to provide fresh water.
	West protection levee (Atchafalaya Basin and West Atchafalaya Floodways)		
5	Simmesport-Hamburg	Levee fuse plug	West Atchafalaya Floodway.

TABLE 41-B (Continued) MISSISSIPPI RIVER TRIBUTARY AND OUTLET IMPROVEMENTS

Mileage Below Head of Atchafalaya River	Locality	Improvement	Remarks
5-105	Mansura to Wax Lake Outlet	Protection levee	--
	Coulee des Grues	Levee enlargement and floodgate extension	--
29	West Atchafalaya Floodway	Railway	--
29	Morganza Floodway	Railway	--
40	Bayou Darbonne	Gated drainage structures	Through West Atchafalaya protection levee.
40	West Atchafalaya Floodway	Highway	--
40	Morganza Floodway	Highway	--
41	Bayou Courtableau	Gated drainage control structures and channels	--
41	West Atchafalaya Floodway	Railway	--
41	Morganza Floodway	Railway	--
94	Charenton	Floodgate and approach channels	Borrow pit channel to Grand Lake through West Atchafalaya protection levee.
94	Jaws-Lake Fausse Pointe	Outlet, Charenton drainage canal and protection levee	Restoration of drainage west of West Atchafalaya Basin protection levee.
105	Calumet	Floodgate, west	Bayou Teche and Wax Lake Outlet.
105	Wax Lake Outlet	Drainage canal-railway and highway bridges	To lower flood heights.
	Atchafalaya River		
0-54	Barbre Landing-Alabama Bayou	East bank, levee	--
5-6	Simmesport	Levee, ring, and drainage structure	--
5-66	Simmesport-Bayou Garofier	West bank, levee	--
28-30	Melville	Levee, ring	--
40-41	Krotz Springs	Levee, ring	--
54-117	Below Alabama Bayou	Channel enlargement	Increase channel capacities to decrease flood heights.
94-106	Mississippi River-Morgan City	12- by 125-foot navigation channel	Through Grand and Six Mile Lakes.
	TECHE-VERMILION BASINS, LA		
	Atchafalaya River to Teche-Vermilion Basins	Pumping station above Krotz Springs, conveyance channels, and appurtenant works	Freshwater distribution from Atchafalaya River to Teche-Vermilion Basins.

TABLE 41-B (Continued) MISSISSIPPI RIVER TRIBUTARY AND OUTLET IMPROVEMENTS

Mileage Above Mouth	Locality	Improvement	Remarks
	Courtableau Basin, LA, and outlets		
0-8	Charenton Canal	Drainage channel	Outlet to gulf
50-133	West Atchafalaya protection levee borrow pit channel	Drainage channel	Intercepting drainage channel.
96	Bayou Courtableau spillway	Drainage control structure	--
133	Bayou des Glaises	Diversion channel	--
	BAYOU COCODRIE AND TRIBUTARIES		
	Bayou Courtableau	Enlargement and additional culverts	Washington to west protection levee.
0-17	Bayou Cocodrie	Enlargement and realignment	--
17-40	Bayous Cocodrie-Boeuf diversion	New channel	--
40-51	Bayou Boeuf	New channel	--
51-60	Bayous Boeuf-Rapides diversion	New channel	--
17-42	Upper Cocodrie	Enlargement, clearing, and snagging	--
	Bayou Boeuf		
87-107	Bayou Lamourie to Kincaid	Enlargement, realignment, clearing, and snagging	--
	Structures		
40	Lecompte Control Structure	Fixed elevation weir	--
60	Bayou Rapides Control Structure	Gated drainage structure	--
87	Bayou Lamourie Control Structure	Gated drainage structure	--
	Various	Railway, highway, and local road bridges, and pipeline crossing	--
	LAKE PONTCHARTRAIN, LA		
	Lake Pontchartrain, Jefferson Parish, LA	Flood protection	([2,3])
	AMITE RIVER, LA		
	Amite River, LA	Bank protection	Authorized by Public Law 81-516. Eliminated by Public Law 89-298.
	LOWER RED RIVER, SOUTH BANK, RED RIVER LEVEES, LA		
82-145	Moncla-Hotwells	Levee, south bank	--
	Bayou Rapides Pumping plant and gravity structure	Levee, south bank	Senate Doc. (Public Law 84-99) Added to project by Public Law 101-514.
	Red River-Moncla to Lake Long	Levees	Intermittent (Sec. 6).

TABLE 41-B (Continued) MISSISSIPPI RIVER TRIBUTARY AND OUTLET IMPROVEMENTS

Mileage Above Mouth	Locality	Improvement	Remarks
	EASTERN RAPIDES AND SOUTH-CENTRAL AVOYELLES PARISHES, LA		
	Eastern Rapides and south-central Avoyelles Parishes, LA	Flood protection and drainage improvement	Authorized by Public Law 91-611.
	TENSAS BASIN, AR AND LA		
	Red River backwater area		
	Tensas-Cocodrie area	Levees, drainage channels, structures, and pumping plant	([4])
3-56	Larto Lake-Jonesville	Levees, drainage channels, and structures	([4])
	Sicily Island area	Levees, drainage channels, structures, and pumping plants	([4])
3-56	Below Red River area	Levees, drainage channels, structures, and pumping plants	([4])
	Black River, LA		
5	Six Mile Bayou area	Drainage structure and appurtenant channel works	Unpublished VXD-MRC Letter Report dated May 31, 1977, MR&T authority.[2]
56	Jonesville, LA	Levees, floodwall, pumping plant, and interior drainage	Portion of levee built under Sec. 6. Incorporated in MR&T by Public Law 81-516.[2]
	Ouachita River	Levees, drainage channels, and structures	Monroe to Sandy Bayou and Bawcomville (Sec. 6).
	Boeuf and Tensas Rivers and Bayou Macon, AR and LA		
	Boeuf River, AR and LA		
0-32	Below Bayou La Fourche	Clearing	([5])
0-56	Bayou La Fourche	Channel improvement and realignment	([5])
151-235	Boeuf River, AR and LA above Bayou La Fourche	Channel improvement	Authorized by Public Laws 78-534 and 79-526.[2,3]
210-286	Canal 19	Channel improvement	([5])
286-296	Canal 19 extension	Channel improvement	([6])
0-75	Big and Colewa Creeks	Channel improvement	Authorized by Public Law 78-534.[3]
	Tributaries of Boeuf River--Canal 19		
0-8	Fleschmans Bayou	Channel improvement	([6])
0-7	Caney Bayou	Channel improvement	([6])
0-33	Big Bayou	Channel improvement	([5])
0-10	Canal 18	Channel improvement	([6])
0-9	Kirsch Lake Canal	Channel improvement	([6])
0-14	Black Pond Slough	Channel improvement	([6])
	Bayou Macon, AR and LA		
0-170	Bayou Macon	Channel improvement	See Table 41-E
0-34	Canal 43	Channel improvement	([5])
0-35	Canal 81	Channel improvement	([5])

TABLE 41-B (Continued) MISSISSIPPI RIVER TRIBUTARY AND OUTLET IMPROVEMENTS

Mileage Above Mouth	Locality	Improvement	Remarks
Lake Chicot	Pumping plant and drainage structure	To divert flows from Lake Chicot	Authorized by Public Law 90-483.
	Tributary of Bayou Macon		
0-6	Rush Bayou	Clearing	([6])
	Tensas River, AR and LA		
0-165	Tensas River	Channel improvement	Authorized by Public Law 78-534.[3]
	Tributary of Tensas River		
0-22	Mill and Vidal Bayous	Channel improvement	Authorized by Public Law 89-298.
	Grant's Canal, LA		
0-0.2	Grant's Canal at Lake Providence	Filling canal	Authorized by Public Law 81-516.
	LOWER ARKANSAS RIVER, AR		
23-98	Yancopin-Pine Bluff	Levee, south bank	--
35-98	Fletcher Bend, AR, to Pine Bluff	Revetment	--
48-102	North Little Rock to Gillett (below Plum Bayou)	Levee, north bank	([5])
	GRAND PRAIRIE-BAYOU METO, AR		
	Grand Prairie Region and Bayou Meto Basin, AR	Aquifer protection. water supply and environmental improvements	Authorized by Public Law 81-516.
	YAZOO BASIN, MS		
0-75	Yazoo Backwater area	Levees and pumping plants	--
0-381	Yazoo River System below Arkabutla Lake	Channel improvement	Including Tallahatchie and Coldwater Rivers.
75-366	Yazoo River between Yazoo City and Prichard	Levees, right bank	Intermittent.
75-345	Yazoo River between Yazoo City and Askew	Levees, left bank	Intermittent.
45-109	Will M. Whittington Auxiliary Channel	Floodway channel	--
75	Yazoo City protection	Levee, drainage structure, and pumping plant	--
	Rocky Bayou area	Channel clearing and enlargement	Improvement of 7.8 miles was approved Apr. 29, 1970.
127	Belzoni protection	Levee and floodwall	--
185	Greenwood protection	Levees, channel improvement, drainage structures, and pumping plants	--
381	Arkabutla Lake	Flood detention and conservation	See Table 41-C.
0-64	Yalobusha River below Grenada Lake	Channel improvement	--
64	Grenada Lake	Flood detention and conservation	See Table 41-C.
0-24	Tallahatchie River-Little Tallahatchie River	Levees, Panola-Quitman Floodway	--
0-26	Little Tallahatchie River below Sardis Lake	Channel improvement	--

TABLE 41-B (Continued) MISSISSIPPI RIVER TRIBUTARY AND OUTLET IMPROVEMENTS

Mileage Above Mouth	Locality	Improvement	Remarks
26	Sardis Lake	Flood detention and conservation	See Table 41-C.
0-13	Yocono River below Enid Lake	Channel improvement	--
13	Enid Lake	Flood detention and conservation	See Table 41-C.
0-88	Cassidy Bayou below Old Coldwater River	Channel improvement	Including Moore's Bayou, Cutoff Bayou, Whiting Lake and outlet.
137-260	Upper Yazoo Projects	Floodway channel	--
75-381	Area between main stem and hills including Bobo Bayou	Levees and channel improvement	Authorized by Public Law 79-526.
	McKinney Bayou enlargement of pumping plant.	Channel improvement and	Authorized by Public Law 79-526.
0-8.3	Alligator-Catfish Bayous	Channel improvement	Authorized by Public Law 89-298. As modified in GDM in 1967.
0-23	Bear Creek	Channel improvement	Authorized by Public Law 89-298.
0-42	Whiteoak Bayou	Channel improvement	Authorized by Public Law 89-298.
275-290	Tallahatchie River, MS	Two road crossings of Panola-Quitman Floodway, MS, and for protection of Sheley Bridge	Authorized by Public Law 90-147.
	Big Sunflower River, etc.		
0-204	Big Sunflower River	Channel improvement	Authorized by Public Law 78-534.[3]
0-8	Hull Brake-Mill Creek Canal	Channel improvement	--
0-28	Hushpuckena River	Channel improvement	--
0-81	Quiver River	Channel improvement	--
	Gin and Muddy Bayous, MS	Channel improvement	Authorized by Public Law 87-874.
0-43	Bogue Phalia	Channel improvement	Authorized by Public Law 78-534.[3]
0-4	Ditchlow Bayou	Channel improvement	Authorized by Public Law 78-534.[3]
0-27	Little Sunflower River	Channel improvement	Authorized by Public Law 78-534.[3]
153-160	Deer Creek	Channel improvement	Authorized by Public Law 78-534.[3]
0-68	Steele Bayou	Channel improvement	Authorized by Public Law 78-534.[3] Modified in December 1970. See Table 41-D.
	Muddy Bayou	Water-control structure	Approved Mar. 3, 1970. See Table 41-D.
	LOWER WHITE RIVER AND BASIN, AR		
13-55	Laconia Circle-Old Town Lake	Levee, backwater including outlet	Mile 605-645 Mississippi River.
		Pumping plant	([6])
0-68	Big Creek and tributaries structures	Channel improvement and	Authorized by Public Law 89-298.

TABLE 41-B (Continued) MISSISSIPPI RIVER TRIBUTARY AND OUTLET IMPROVEMENTS

Mileage Above Mouth	Locality	Improvement	Remarks
99	Clarendon levee	Levee and outlet structures	Authorized by Public Law 89-298.
108-192	Augusta to Clarendon	Levees, outlet structures	([5])
122	De Valls Bluff	Levee, outlet structure, and pumping station	([5])
143	Des Arc, AR	Levee, outlet structure, and pumping station	Authorized by Public Law 81-516.
	CACHE BASIN, AR		
0-196	Cache River, AR	Channel improvement and structures	Authorized by Public Law 81-516.
0-90	Bayou DeView, AR	Channel improvement and structures	Authorized by Public Law 81-516.
	ST. FRANCIS RIVER AND BASIN, AR AND MO		
260	Inter-River Drainage District in Missouri	Channel improvement and two outlet structures	Authorized Dec. 16, 1975. See Table 41-D.
0-225	Mouth of St. Francis River-Wappapello Dam	Floodway, levees, drainage channels, and structures	--
225	Wappapello Lake	Flood detention and conservation	See Table 41-C.
0-105	Little River Basin	Floodway, levees, drainage channels, and structures	--
86	Marked Tree, AR	Marked Tree Siphon	--
0-36	Tyronza River	Channel improvement	--
0-29	Big Slough Ditch	Channel improvement	--
0-17	Mayo Ditch	Channel improvement	--
0-12	Cross County Ditch	Channel improvement	--
	Belle Fountain Ditch	Channel improvement	Authorized by Public Law 90-483.
	Drainage District No. 17	Channel improvement and pumping station	Authorized by Public Law 90-483.
	L'ANGUILLE RIVER, AR		
0-108	L'Anguille River and tributaries, Brushy and First Creeks	Channel improvement	Authorized by Public Law 80-858.
	WEST TENNESSEE TRIBUTARIES		
0-25	Wolf River and tributaries, TN	Channel improvement	([6])
	Obion River and tributaries, North, South, Middle, and Rutherford Forks	Channel improvement	Authorized by 1948 Flood Control Act.
	Forked Deer River and tributaries, North, Middle, and South Forks	Channel improvement	Authorized by 1948 Flood Control Act.
	Mud Lake Pumping Station, TN	Pumping plant	Authorized by Resolutions Dec. 15 and 17, 1970.[2]

TABLE 41-B (Continued) MISSISSIPPI RIVER TRIBUTARY AND OUTLET IMPROVEMENTS

Mileage Above Mouth	Locality	Improvement	Remarks
	Harris Fork Creek, TN and KY	Flood control improvements	Authorized by Water Resources Act of Oct. 22, 1976.[2] Section 102, 1976.[2]
	Porter Gap, TN	Construction to main-stem standards, levee and appurtenant structures for flood control	Section 183, 1976.[2]
	REELFOOT LAKE-LAKE NO. 9, TN AND KY		
0-20	Running Reelfoot Bayou, TN	Channel improvement	Authorized by Public Law 83-780.
0-15	Bayou du Chien and Lake No. 9, KY and TN	Channel improvements and pumping station	Authorized in December 1970. See Table 41-D.
	WEST KENTUCKY TRIBUTARIES, KY		
0-47	Obion Creek, KY	Channel improvement	Authorized by Public Law 89-298.
	LITTLE RIVER DIVERSION CHANNEL, MO		
	Delta to Ancell, MO	Levees	Mile 49 above Cairo.
	MISSOURI RIVER, MO		
0-28	Mouth to St. Charles, MO	Levees	Intermittent (Sec. 6).
	ILLINOIS RIVER, IL		
0-120	Mouth to Havana, IL	Levees	Intermittent (Sec. 6).
	OHIO RIVER, IL AND KY		
	Cairo to Mound City and Mounds, IL	Floodwall, levee, revetment, and pumping plant	

1. General data concerning Bayou Boeuf, Bayou Sorrel, and Berwick locks where Atchafalaya Basin protection levees cross Gulf Intracoastal Waterway, alternate route to Plaquemine, LA, and lower Atchafalaya River (extension of Bayou Tech Waterway), respectively, are in report of New Orleans District.
2. Also see Table 41-D, "Authorizing Legislation."
3. Public Law 81-516 modified requirements of local cooperation.
4. Authorized by Public Law 77-228. Modified by Public Law 89-298.
5. Authorized or incorporated in MR&T by Public Law 79-526.[3] See Table 41-D.
6. Authorized by Public Law 85-500.

TABLE 41-C MISSISSIPPI RIVER TRIBUTARY DAMS AND LAKES

Grenada Name[1]	Enid Lake	Sardis Lake	Arkabutla Lake	Wappapello Lake	Lake
River	Yalobusha	Yocona	Little Tallahatchie	Coldwater	St. Francis
Nearest town to damsite	Grenada	Enid	Sardis	Arkabutla	Wappapello
Drainage area, square miles	1,320	560	1,545	1,000	1,310
Conservation pool:					
Area, thousand acres	10	6	11	5	4
Volume, thousand acre-feet	86	58	108	31	31
Elevation, feet, NGVD	193.0	230.0	236.0	209.3	354.7
Flood control pool:					
Area, thousand acres	65	28	58.5	33	23
Volume, thousand acre-feet	1.252	602	1,462	494	582
Runoff, inches	17.8	20.2	17.7	9.3	8.4
Outlet gates:					
Number	3	2	4	3	3
Size, feet	7.5 by 14	8 by 16	6 by 12	8.5 by 19	10 by 20
Capacity, thousand cubic feet per second	10.7	9.4	10.0	10.0	18.0
Spillway:					
Type, uncontrolled	Chute	Chute	Chute	Chute	Gravity
Length, feet	200	200	400	300	740
Elevation, crest, feet, NGVD	231.0	268.0	281.4	238.3	394.7
Discharge capacity, thousand cubic feet per second	52	50	132	89	229
Surcharge pool:					
Area, thousand acres	106	41	90	63	32
Volume, thousand acre-feet	1,385	554	1,447	858	521
Runoff, inches	19.7	18.5	17.6	16.1	7.5
Elevation, feet, NGVD	247.5	284.0	301.0	256.3	413.7
Dam:					
Type, earthfill	Rolled	Rolled	Hydraulic	Rolled	Rolled
Length, thousand feet	13.9	8.4	15.3	11.5	2.7
Elevation, crest, feet, NGVD	256.0	293.0	311.4	264.3	419.7

1. Grenada, Enid, Sardis, and Arkabutla Lakes are in Yazoo River Basin, MS; Wappapello Lake is in St. Francis River Basin, MO.

TABLE 41-D AUTHORIZING LEGISLATION

Act or Authorization	Work Authorized	Document
May 15, 1928	Flood protection in alluvial valley of Mississippi River, revetment and contraction works and dredging to provide least channel depth of 9 feet and width of 300 feet below Cairo.	H. Doc. 90, 70th Cong., 1st sess.
Jun. 19, 1930	Provided for allotment of the balance of emergency rescue funds to reimburse levee districts and others for expenditures in flood-control works during the 1927 and subsequent floods.	Public Law 395, 71st Cong., 2d sess.
Feb. 15, 1933	Provided for ownership of lands in Bonnet Carre? Spillway and Floodway with proviso for granting rights-of-way, easements, and permits, in said lands.	Public Law 351, 72d Cong.
Apr. 23, 1934	Authorized payment for purchase of, or to reimburse states and local levee districts for the cost of, levee rights-of-way for flood-control work in the Mississippi Valley, and for other purposes.	Public Law 171, 73d Cong.
Aug. 30, 1935	Improvement of Wolf and Nonconnah Rivers, TN (Nonconnah Creek is correct title). Improvement of Wolf River (Memphis Harbor), TN.	R&H Comm. Doc. 26, 72d Cong., 1st sess. R&H Comm. Doc. 45, 74th Cong., 1st sess.
Jun. 15, 1936	Modification of the 1928 Act to provide for: Construction of a backwater levee at mouth of White River, AR. Construction of Eudora floodway in lieu of Boeuf floodway; flood control, Yazoo River: construction of Morganza floodway; and an outlet to the Gulf of Mexico west of Berwick, LA, including a 6-year program for the improvement and regularization of the Mississippi River between Arkansas and Red Rivers, and Atchafalaya River; and construction of roads on levees and drainage adjustments incident to floodway levees.	 Unpublished report dated Apr. 2, 1925. H. Comm. on Flood Control, Doc. 1, 74th Cong., 1st sess.
Aug. 28, 1937	Provided for construction of floodwalls, levees, and revetments along Wolf River and Nonconnah Creek for protection of Memphis, TN. Modify the Yazoo River project to substitute a combined reservoir floodway and levee plan.	Unpublished report on record in OCE.
Jun. 28, 1938	Construction of Mounds to Mound City levee and control works along Cache River, IL. Modification of previous act pertaining to floodways and outlets and lands therein; including program for the improvement and regularization of the Mississippi River, between Cairo and Arkansas River, extension of levee road system; strengthening of levees.	H. Comm. on Flood Control, Doc. 1, 75th Cong., 1st sess. H. Comm. on Flood Control, Doc. 1, 75th Cong., 1st sess.
Aug. 18, 1941	Enlarge main line levees to offset abandonment of floodways between Arkansas and Red Rivers, flood-control works in backwater areas of Yazoo and Red Rivers, and in Bayous Rapides, Beouf, and Cocodrie, LA.	H. Doc. 359, 77th Cong., 1st sess.

TABLE 41-D (Continued) AUTHORIZING LEGISLATION

Act or Authorization	Work Authorized	Document
Dec. 22, 1944	Navigation channel 12 feet deep and 300 feet wide between Baton Rouge and Cairo; flood protection of Yazoo River Backwater Area in vicinity of Satartia, MS.	H. Doc. 509, 78th Cong., 2d sess.
	Continue prosecution of channel improvement and stabilization program, $200 million.	Public Law 534, 78th Cong., 2d sess.
Jul. 24, 1946	Flood control on the Big Sunflower, Little Sunflower, Hushpuckena, and Quiver Rivers and their tributaries, and on Hull Brake-Mill Creek Canal, Bogue Phalia, Ditchlow Bayou, Deer Creek, and Steele Bayou, MS.[1]	H. Doc. 516, 78th Cong., 2d sess.
	Improve Boeuf and Tensas Rivers and Bayou Macon, AR.[1]	S. Doc. 151, 78th Cong., 2d sess.
	Improve Bayou Lafourche, LA.	S. Doc. 191, 79th Cong., 2d sess.
	Improve Yazoo River tributaries.	H. Doc. 516, 78th Cong., 2d sess.
	North bank, Arkansas River levees(below Plum Bayou).[1]	H. Doc. 308, 74th Cong., 1st sess.
	Levees on White River (Augusta to Clarendon).[1]	H. Doc. 98, 76th Cong., 1st sess.
	Bayou des Glaises diversion channel, LA.[1]	H. Doc. 602, 79th Cong., 2d sess.
	Modify local cooperation requirements in St. Francis and Yazoo Basins.	Public Law 526, 79th Cong., 2d sess.
	Tiptonville-Obion levee and drainage improvements.[1]	H. Doc. 757, 79th Cong., 2d sess.
	Improvement of St. Johns Bayou, MO.	H. Doc. 138, 80th Cong., 1st sess.
	Big Sunflower River, etc.[1]	H. Doc. 516,78th Cong., 2d sess.
	Tennessee Chute (Memphis Harbor), TN.	S. Doc. 51, 80th Cong., 1st sess.
	Continue prosecution of project for flood control and channel improvement, $100 million.	Public Law 526, 79th Cong., 2d sess.
Jun. 30, 1948	Improve Mississippi River below Cape Girardeau, MO, with respect to West Tennessee tributaries.	H. Doc. 627, 80th Cong., 2d sess.
	Improve L'Anguille River, AR.	H. Doc. 651, 80th Cong., 2d sess.
	Baton Rouge Harbor (Devils Swamp), LA.[1]	H. Doc. 321, 80th Cong., 1st sess.
May 17, 1950	Flood protection at Des Arc, AR.	H. Doc. 485, 81st Cong., 2d sess.
	Improve St. Francis River and Basin, AR and MO.	H. Doc., 132, 81st Cong., 1st sess.
	Improve Cache River and Bayou DeView, AR and MO.	S. Doc. 88, 81st Cong., 1st sess.
	Improve Grand Prairie Region and Bayou Meto Basin, AR.	H. Doc. 255, 81st Cong., 1st sess.

TABLE 41-D (Continued) AUTHORIZING LEGISLATION

Act or Authorization	Work Authorized	Document
	Flood protection, Lake Pontchartrain, Jefferson Parish, LA.[1]	S. Doc. 139, 81st Cong., 2d sess.
	Filling Grant's Canal, Lake Providence, LA.	Public Law 516, 81st Cong., 2d sess.
	Additional protection to Red River Backwater Area.	Public Law 516, 81st Cong., 2d sess.
	Extend Federal jurisdiction to cover levees in Orleans Parish, LA.	Public Law 516, 81st Cong., 2d sess.
	Bank protection, Amite River, LA.	Public Law 516, 81st Cong., 2d sess.
	Continue prosecution of project for flood control and channel improvement, $200 million.	Public Law 516, 81st Cong., 2d sess.
	Jonesville, LA, levee, retaining wall, and drainage structure.[1]	S. Doc. 117, 81st Cong., 1st sess.
Oct. 30, 1951	Modify requirements for local cooperation in White River Backwater Area, AR.	Public Law 237, 82d Cong., 1st sess.
Sep. 3, 1954	Navigation improvement of Atchafalaya from Mississippi River to Morgan City, LA.	S. Doc. 53, 82d Cong., 1st sess.
	Modify project for Vicksburg-Yazoo Area (Harbor), MS.	H. Doc. 85, 83d Cong., 1st sess.
	Improve New Madrid Floodway, MO, including Peafield drainage floodgate.	H. Doc. 183, 83d Cong., 1st sess.
	Control of Old and Atchafalaya Rivers and a lock for navigation.	H. Doc. 478, 83d Cong., 2d sess.
	Improve Reelfoot Lake area, KY and TN.	S. Doc. 160, 83d Cong., 2d sess.
Jul. 3, 1958	Improve Greenville Harbor, MS.	S. Doc. 15, 86th Cong., 1st sess.
	Extensions to project for Boeuf and Tensas Rivers and Bayou Macon in Arkansas.	H. Doc. 108, 85th Cong., 1st sess.
	White River backwater area pumping plant.	S. Doc. 26, 85th Cong., 1st sess.
	Wolf River and tributaries for flood protection in Tennessee.	H. Doc. 76, 85th Cong., 1st sess.
Jul. 14, 1960	Continue prosecution of project for channel improvement--$50 million.	Public Law 86-645.
Oct. 23, 1962	Modification--Baton Rouge Harbor (Devils Swamp), LA.	Public Law 87-874.
	Construct improvements in Gin and Muddy Bayous, Yazoo River Basin, MS.	Public Law 87-874
	Replace 2 bridges with adequate floodway over Boeuf River and Big Bayou in Boeuf Basin, AR.	Public Law 87-874.
Jun. 18, 1965	Continue prosecution of project for flood control and channel improvement, $53 million.	Public Law 89-42.

TABLE 41-D (Continued) AUTHORIZING LEGISLATION

Act or Authorization	Work Authorized	Document
Oct. 27, 1965	Modify and expand levees and channel improvement features of main stem project.	H. Doc. 308, 88th Cong., 2d sess.
	Modify flood control improvements in following tributary areas and basins: Cairo-Mounds-Mounds City, St. Francis, Lower White, Boeuf-Tensas-Macon, Red River backwater, Yazoo headwater, Grand Prairie, and Bayou Meto.	H. Doc. 308, 88th Cong., 2d sess.
	Acquire any modified easements required in New Madrid Floodway as provided by Sec. 4 of May 15, 1928 act.	H. Doc. 308, 88th Cong., 2d sess.
	Operate and maintain pumping plant in Red River backwater area (Tensas-Cocodrie Pumping Plant).	H. Doc. 308, 88th Cong., 2d sess.
	Provide improvements in West Kentucky tributaries.	H. Doc., 308, 88th Cong., 2d sess.
	Provide fish and wildlife facilities in St. Francis and Big Sunflower Basins; Yazoo Headwater and Backwater Areas; and Mississippi Delta region.	H. Doc. 308, 88th Cong., 2d sess.
	Deauthorize Amite River, LA, project.	H. Doc. 308, 88th Cong., 2d sess.
	Modify St. Francis River, MO and AR, project within District No. 7, Poinsett County, AR.	S. Doc. 57, 89th Cong., 1st sess.
Apr. 14, 1966[2]	Provide pumping plant and drainage structure at Wilson Point, LA.	Unpublished Vicksburg District's MRC report. Approved Apr. 14, 1966.
Nov. 7, 1966	Construction of improvements to supplement freshwater supply in Teche-Vermilion Basins in Louisiana.	H. Doc. 524, 89th Cong., 2d sess.
	Bank revetment for protection of existing industrial facilities along Mississippi River below Baton Rouge, LA.	Public Law 89-789.
	Modification of West Tennessee tributaries feature to provide relocation of gas transmission lines at Federal expense.	Public Law 89-789.
Nov. 20, 1967	Continue emergency work, $87,135,000, which includes $100,000 for road crossing of Panola-Quitman Floodway, MS, and $80,000 for protection of Sheley Bridge, Tallahatchie River, MS.	Public Law 90-147.
Aug. 13, 1968	Improvements in Boeuf and Tensas Rivers and Bayou Macon Basin to divert flows that would otherwise enter Lake Chicot, AR.	H. Doc. 168, 90th Cong., 1st sess.
	Improvements in the Belle Fountain ditch and tributaries, MO, and Drainage District No. 17, AR.	H. Doc. 339, 90th Cong., 2d sess.
	Provide pumping plants and other drainage facilities in Cairo, IL, and vicinity.	Public Law 90-483.
Sep. 10, 1968[3]	Modification of Yazoo Headwater Project to include cleanout along David Bayou, MS.	Unpublished MRC report dated May 8, 1968.
Mar. 3, 1970[3]	Modify Yazoo Backwater feature to include a control structure in Muddy Bayou, MS.	Unpublished MRC report dated Feb. 2, 1970.

TABLE 41-D (Continued) AUTHORIZING LEGISLATION

Act or Authorization	Work Authorized	Document
Apr. 29, 1970[3]	Modification of Yazoo Headwater Project to include drainage structure and channel improvement on Rocky Bayou, MS.	Unpublished MRC report dated Mar. 6, 1970.
Jun. 4, 1970[3]	Provide for enlargement of Bayou Latenache from Pointe Coupee drainage structure to Alabama Bayou, LA.	Unpublished MRC report dated Sep. 22, 1969.
Dec. 31, 1970	Modify and expand project to include flood protection within the area of eastern Rapides and south-central Avoyelles Parishes, LA, that are drained by Bayou des Glaises diversion channel and Lake Long, and their tributaries.	S. Doc. 91-113, 2d sess.
	Modify the project for West Kentucky tributaries (Obion Creek), KY, to provide for all relocations, at Federal expense, of all transmission lines required by the project.	Public Law 91-611.
Senate and House Public Works Resolutions adopted Dec. 17 and 15, 1970, respectively.[4]	Report on Western Tennessee Tributaries, TN and KY, authorized: a. Modification of Reelfoot Lake feature to provide channel improvements on Bayou du Chien and Lake No. 9 in KY and TN. b. Modification of Mississippi levee feature to include a pumping station near Mud Lake floodgate and adjacent channel improvements.	H. Doc. 91-414, 2d sess.
	Modification of Big Sunflower Basin feature to provide additional improvements in Steele Bayou Basin, MS.	S. Doc. 91-74, 2d sess.
River Basin Monetary Act of Dec. 23, 1971	Continue prosecution of project for the comprehensive development of the basin, $97 million.	Sec. 1, Public Law 92-222.
	Modification of Tiptonville-Obion River levee feature to relieve local interests of all responsibility except that of providing maintenance.	Sec. 7, Public Law 92-222.
Jan. 19, 19732	Modification of the Mississippi levee feature to provide additional drainage facilities in Long Lake area, vicinity of Helena, AR.	Unpublished Memphis District's MRC report dated Oct. 4, 1972.
TITLE I Water Resources Development Act of 1974.	Projects recommended by four completed reports were authorized for accomplishment of Phase I design memorandum of advance engineering and design on:	Sec. 1, Public Law 93-251, Mar. 7, 1974.
	a. Greenville Harbor, Greenville, MS.	S. Doc. 93-38, 1st sess.
	b. East bank of Mississippi River, Warren to Wilkinson Counties, MS (Natchez area).	H. Doc. 93-148, 1st sess.
	c. East bank of Mississippi River, Warren to Wilkinson Counties, MS (Vicksburg-Yazoo area).	H. Doc. 93-148, 1st sess.
	d. Bushley Bayou Area of Red River Backwater Area, LA.	H. Doc. 93-157, 1st sess.
	Modification of West Tennessee tributaries feature (Obion and Forked Deer Rivers), TN, to acquire lands for fish and wildlife, recreation, and environmental purposes.	Sec. 3, Public Law 93-251.

TABLE 41-D (Continued) AUTHORIZING LEGISLATION

Act or Authorization	Work Authorized	Document
	Modification of the Yazoo Basin, MS, feature to provide for a streambank erosion control demonstration project for the delta and hill areas of basin.	Sec. 32, Public Law 93-251.
	Modification of project to provide that the Secretary of the Army, acting through the Chief of Engineers, can substitute authorized mitigation lands, not yet acquired and no longer suitable, for like acreage in the same or adjacent subbasins of the project area. This section provides the authority to substitute authorized mitigation lands in: a. Tensas Basin, LA and AR, feature (Red River backwater). b. St. Francis Basin, AR and MO, feature.	Sec. 42, Public Law 93-251.
	Modification of Bayou Cocodrie and tributaries, LA, feature, to provide for: enlargement of Bayou Courtableau from Washington to west protection levee; right-of-way and spoil disposal areas at Federal expense; and necessary additional culverts through west protection levee.	Sec. 87, Public Law 93-251.
	Modification of Cache River Basin, AR, feature to provide for: acquisition by fee easements of lands for fish and wildlife management, recreation, and environmental purposes.	Sec. 99, Public Law 93-251.
TITLE II River Basin Monetary Authorization Act of 1974	Continue prosecution of project for the comprehensive development of the basin, $211 million.	Sec. 201, Public Law 93-251. Mar. 7, 1974.
River Basin Monetary Act of Oct. 2, 1975	Continue prosecution of project for the comprehensive development of the basin, $158,000,000.	Sec. 1, Public Law 94-101.
Dec. 16, 1975[2]	Modification of St. Francis Basin, AR and MO, feature to provide relief from ponding of interior runoff in the Inter-River Drainage District of Missouri.	Unpublished Memphis District's MRC report dated Nov. 11, 1975.
TITLE II Public Works for Water and Power Development and Energy Research Appropriation Act, 1976.	Continue prosecution of project for comprehensive development during period Jul. 1-Sep. 30, 1976, $60,300,000.	Public Law 94-180, Dec. 26, 1975.

TABLE 41-D (Continued) AUTHORIZING LEGISLATION

Act or Authorization	Work Authorized	Document
TITLE II Public Works for Water and Power Development and Energy Research Appropriation Act, 1977.	Continue prosecution of project for flood control, rescue work, repair, restoration, and control of bank erosion, $231,497,000.	Public Law 94-355, Jul. 12, 1976.
Water Resources Development Act of 1976.	Sec. 101(a) authorized accomplishment of Phase I - Advanced Engineering and Design Memoranda-On: a. St. Johns Bayou and New Madrid Floodway, MO, project: Report of OCE - Sep. 26,1975. b. Nonconnah Creek, TN and MS, project: Report of OCE - Jun. 23, 1976, and as an independent part of the project: Improvements for flood control and allied purposes on Horn Lake Creek and tributaries, including Cowpen Creek, TN and MS. Modification of West Tennessee Tributaries feature (Obion and Forked Deer Rivers), TN, to: a. (Sec. 102) - Provide project for flood control for Harris Fork Creek, TN and KY: (H.D. 94-221) except that highway bridge relocations and alterations shall be at Federal expense. b. (Sec. 183) - Provide for construction of a levee and appurtenant works from mouth of Obion diversion channel to vicinity Highway 88 and thence to vicinity of Porter Gap, TN.	Public Law 94-587, Oct. 22, 1976.
TITLE II Public Works for Water and Power Development and Energy Research Appropriation Act, 1978.	Continue prosecution of project for flood control, rescue work, repair, restoration, and control of bank erosion, $253,081,000.	Public Law 95-96 Aug. 7, 1977.
Dec. 9, 1977, 5th Ind. on VXD May 31, 1977, Letter Report.[2]	Modification of the Tensas Basin Project, Red River Backwater Area, to include a drainage structure and appurtenant channel works in the Six Mile Bayou area of Concordia Parish, LA.	Unpublished Vicksburg District report dated May 31, 1977, on Cynthia and Six Mile Bayous, LA.
Jun. 28, 1980	The establishment of the Tensas River National Wildlife Refuge for the preservation and development of environmental resources and in lieu of mitigation acquisitions which otherwise would be required for certain water resources projects, within designated limits, in the basins of the Tensas, Boeuf, and Red Rivers in the State of Louisiana.	Public Law 96-285, Jun. 28, 1980.

TABLE 41-D (Continued) AUTHORIZING LEGISLATION

Act or Authorization	Work Authorized	Document
Energy and Water Development Appropriation Act. 1981	For expenses necessary for prosecuting work of flood control projects, rescue work, repair, restoration or maintenance of flood control projects threatened or destroyed by flood, $232,519,000: Provided, That not less than $250,000 be available for control of bank erosion of streams in the Yazoo Basin, including the foothill area. Provided further, That funds for the Tensas Basin Red River Backwater Area, be used for flood control, etc., for Sicily Island and Below Red River including pumping stations.	Public Law 96-367, Oct. 1, 1980.
Supplemental Appropriations Bill for FY Ending Sep. 30, 1985 (PL 99-88), and the Water Resources Development Act of 1986 (PL 99-662)	Authorizes and directs the Secretary of the Army acting through the Chief of Engineers to proceed with planning, design, engineering, and construction of 41 water resources projects, including Atchafalaya Basin Floodway System. For the Atchafalaya Basin Floodway Systems project, cost-sharing is only required for the recreation feature of the project. The flood control and environmental features are Federal costs.	FY 1985 Supplemental Appropriations Bill (PL 99-88), and Water Resources Development Act of 1986 (PL 99-662).
Water Resources Development Act, 1986	Sec. 104(a), Authorization of Projects - Authorization of Construction: Incorporation of the project for flood control, Louisiana State Penitentiary levee, Mississippi River, LA: Report of the Chief of Engineers, dated Dec. 10, 1982, at a total cost of $23,400,000, with an estimated first Federal cost of $17,600,000 and an estimated first non-Federal cost of $5,800,000. No acquisition of land for or actual construction of the project may commence until appropriate non-Federal interests shall agree to undertake measures to minimize the loss of fish and wildlife habitat lands in the project area. The work is unscheduled. a. Bushley Bayou, LA. Water Resources Development Act of 1986 authorized the project for flood control, Bushley Bayou, LA. b. Eight Mile Creek, Paragould, AR. Project entails channel improvement along the creek with miniparks and hiking/ biking trails. c. Helena and Vicinity, AR. The Helena Basin is an urban basin containing approximately 3,500 acres which frequently and severely floods the city of Helena. A pumping station and sump with channel enlargement and a gated culvert was recommended. d. West Memphis and Vicinity, AR. Channel improvements along Ten Mile Bayou and Fifteen Mile Bayou for a total of 23.86 miles, with limited revegetation of right-of-way to maintain environmental stability. e. St. Johns Bayou and New Madrid Floodway, MO. Flood control for urban and rural land.	Public Law 99-662, Nov. 17, 1986.

TABLE 41-D (Continued) AUTHORIZING LEGISLATION

Act or Authorization	Work Authorized	Document
	f. Nonconnah Creek and Johns Creek, TN and MS. Channel enlargement, recreation features with channel construction and environmental enhancement.	
	g. Horn Lake Creek and Tributaries, TN and MS. This is an urban flood control project located in extreme northwest Mississippi and southwest Tennessee. The plan of improvement consists of 3.5 miles of selective drift removal on lower Horn Lake Creek and 2.6 miles of vegetative clearing on Horn Lake Creek, 2.1 miles on Rocky Creek and 0.6 miles of vegetative clearing and 1.8 miles of channel enlargement on Cow Pen Creek. Hike/bike trails are included along Rocky Creek and Cow Pen Creek.	
	h. Atchafalaya Basin Floodway System, La. Not mentioned, but this Act authorized basic cost sharing principles for the project. In particular establishes that the fish and wildlife enhancement feature of the project is of national significance, and therefore, a 100 percent Federal cost.	
Energy and water Development Appropriation Act, 1994	i. Lower Atchafalaya Basin Reevaluation Study. Authority to, within available funds, investigate conditions at Wax Lake Outlet, Bayou Black, and other features, and recommend any modification desirable for flood protection navigation, and environmental program.	
	Sec. 601(a) Authorization of Projects. Authorization of Construction:	
	a. Yazoo Backwater Area, MS. Authorized the project for mitigation of fish and wildlife losses at the Yazoo Backwater Project, MS. The project shall include acquisition of 40,000 acres for mitigation of project-induced fish and wildlife losses.	
	b. Greenville Harbor, MS. Authorized the project for navigation, Greenville Harbor, MS, as contained in the reports of Chief of Engineers, Nov. 15, 1977 and Feb. 2, 1982, at a total cost of $43,700,000 with an estimated first Federal cost of $28,000,000 and an estimated non-Federal first cost of $15,700,000.	
	c. Vicksburg Harbor, MS. Authorized the project for navigation, Vicksburg Harbor, as contained in the report of the Chief of Engineers, Aug. 13, 1979, at a total estimated first Federal cost of $55,900,000 and an estimated non-Federal first cost of $23,300,000.	
	d. Helena Harbor, Phillips County, AR. The recommended plan consists of dredging a navigation channel to provide access to 685 acres of landfill; construction of an overlook park; implementing landscaping and erosion control measures; and mitigation fish and wildlife losses. The project is scheduled to be constructed in two phases.	

TABLE 41-D (Continued) AUTHORIZING LEGISLATION

Act or Authorization	Work Authorized	Document
	e. White River Navigation to Batesville, AR. The plan of improvement recommended in the Feasibility Report provides for construction and maintenance to provide a 200-foot wide, 9-foot deep channel available 95 percent of the time from mile 10 (Arkansas Post Canal) to mile 254, two scenic overlooks, a primitive camping area, and acquisition of about 1,865 acres of woodlands for mitigation. However, section 52 of the Water Resources Development Act of 1988 deauthorized this project. f. Obion Creek, KY. To prevent headwater flooding along tributary streams and backwater flooding of alluvial lands. g. Memphis Harbor, Memphis, TN. This is a navigation project in the vicinity of Memphis, TN, which would consist of dredging and maintaining a 4.9 mile long, 500-foot minimum width, 9-foot deep general navigation channel with additional dredging as required and strategic placement of dredged material to create and provide navigation access to 1,000 acres to be developed as a waterfront industrial complex. Sec. 806. Reelfoot Lake, KY. This project is modified to provide that the Federal share of the cost of operating the pumping plant feature of such project shall be 50 percent. Sec. 836. Mud Lake, Western Tennessee Tributaries. This project is modified to provide that the requirements of local cooperation shall be (1) 50 percent of the value of the lands, easements, and rights-of-way, (2) to hold and save the United States free from damages due to the construction works, and (3) to maintain and operate all the works after completion.	
Jun. 4, 1987	Modification of Mississippi Delta Region project to construct salinity control structure at Davis Pond (mile 118) rather than at Myrtle Grove (mile 59).	Unpublished New Orleans District report, Nov. 1, 1984.
Water Resources Development Act, 1988	Sec. 3(a), Project Authorizations - Authorization of Construction: a. Mississippi-Louisiana Estuarine Area, MS and LA. Authorized the project for environmental enhancement, as contained in the report of Chief of Engineers, dated May 19, 1986, at a total cost of $59,300,000.	Public Law 100-676 Nov. 17, 1988
Water Resources Development Act, 1988	Section 4(b) West Memphis and Vicinity, AR. Modified the project by allowing that non-Federal cooperation may be provided by levee districts, drainage districts, or any unit of a state, county, or local government.	Public Law 100-676, Nov. 17, 1988

TABLE 41-D (Continued) AUTHORIZING LEGISLATION

Act or Authorization	Work Authorized	Document
Energy and Water Development Appropriation Bill, 1990	West Memphis and Vicinity, AR. Directed the Corps to develop the most cost-effective flood control plan for the City of West Memphis without regard to frequency of flooding, drainage area, and the amount of runoff.	Public Law 101-83, Jul. 25, 1989
Energy and Water Development Appropriation Bill, 1990	Bayou Rapides Drainage Structure and Pumping Plant Directed the Secretary of the Army to incorporate existing flood control features for the Bayou Rapides Drainage Structure and Pumping Plant into the Lower Red River, South Bank Levees portion of the MR&T Project.	Public Law 101-514, Nov. 5, 1990
Supplemental Appropriations Bill for FY Ending Sep. 30, 1985 (PL 99-83), and the Water Resources Development Act of 1986 (PL 99-662)	Atchafalaya Basin Floodway System, LA. Authorizes and directs the Secretary of the Army acting through the Chief of Engineers to proceed with planning, design, engineering, and construction of 41 water resources projects, including Atchafalaya Basin Floodway System. For the Atchafalaya Basin Floodway Systems project, cost-sharing is only required for the recreation feature of the project. The flood control and environmental features are Federal costs. This act authorized basic cost sharing principles for the project. In particular, establishes that the fish and wildlife enhancement feature of this project is of national significance and therefore a 100% federal cost.	FY 1985 Supplemental Appropriations Bill (PL 99-88), and Water Resources Development Act of 1986 (PL 99-662).
Water Resources Development Act, 1992	Whiteman's Creek, Arkansas. Directed the Secretary of the Army to implement flood control improvement, which essentially consist of 6.1 miles of channel enlargement along streams within the city limits of Jonesboro, Arkansas.	Public Law 102-580 Oct. 31, 1992
Water Resources Development Act, 1992	New Madrid Harbor, Missouri Directed the Secretary of the Army to assume responsibility for maintenance of the New Madrid County Harbor constructed by non-Federal interests before that date of the enactment of this Act in lieu of maintaining the existing Federal channel.	Public Law 102-580 Oct. 31. 1992
Water Resources Development Act, 1996	Grand Prairie and Bayou Basin, Arkansas The project for flood control, Grand Prairie Region and Bayou Meto Basin, Arkansas, authorized by section 204 of the Flood Control Act of 1950 (64 Stat. 174) and deauthorized pursuant to section 1001(b) of the Water Resources Development Act of 1986 (33 U.S.C. 579a(b)), is authorized to be carried out ground water protection and conservation, agricultural water supply, and waterfowl management if the Secretary determines that the change in the scope of the project is technically sound, environmentally acceptable, and economic, as applicable.	Public Law 104-303 Oct. 12, 1996

TABLE 41-D (Continued) AUTHORIZING LEGISLATION

Act or Authorization	Work Authorized	Document
Water Resources Development Act, 1996	White River, Arkansas The project for navigation, White river Navigation to Batesville, Arkansas, authorized by section 601(a) of the Water Resources Development Act of 1986 (100 Stat 4139) and deauthorized by section 52(b) of the Water Resources Development Act of 1988 (102 Stat. 4044), is authorized to be carried out by the Secretary.	Public Law 104-303 Oct 12, 1996
Water Resources Development Act, 1999	Memphis Harbor, Memphis, Tennessee Authorized to be carried out by the Secretary, if the Secretary determines that the project is technically sound, environmentally acceptable, and economically justified, as appropriate.	Public Law 106-53 Aug. 17, 1999
Water Resources Development	Tunica Lake Weir, Mississippi The Secretary shall conduct a study to determine the feasibility of constructing an outlet weir at Tunica Lake, Tunica county, Mississippi, and Lee County, Arkansas, for the purpose of stabilizing water levels in the lake. In carrying out the study, the Secretary shall include as part of the economic analysis the benefits derived from recreation uses at Tunica Lake and economic benefits associated with restoration of fish and wildlife habitat.	Public Law 106-53
Water Resources Development Acts, 1986, 1990 and 1999	Louisiana State Penitentiary Levee, Mississippi River, Louisiana Authorizes and directs the Secretary of the Army, acting through the Chief of Engineers to proceed with planning, design, engineering, and construction of improvements of 12 miles of existing levee along the Mississippi River which provides flood protection to the Louisiana State Penitentiary at Angola, LA. This act authorizes basic cost sharing principles, and establishes that the cost sharing will be shared on a 75%/25% basis with the state of Louisiana for this project. Authorizes the Secretary of the Army to consider credit for work performed by an non-Federal sponsor since project authorization.	Public Law 99-662 Nov. 17, 1986 Public Law 101-646 Nov. 28, 1990 Public Law 106-53 Aug. 17, 1999

1. Incorporated into Mississippi River and tributaries project as shown in Table 41-E.
2. Date minor modification for blocked drainage was approved under delegated authority of the President, Mississippi River Commission, and in accordance with Sec. 10(p) of the 1946 Flood Control Act (Public Law 79-526).
3. Date minor modification was approved under discretionary authority of Chief of Engineers contained in May 15, 1928, Flood Control Act, as amended.
4. Projects approved under the provisions of Sec. 201 of Flood Control Act of Oct. 27, 1965.

TABLE 41-E INCORPORATING AND AUTHORIZING LEGISLATION

Act of Incorporation	Public Law No.	Authorizing Act	Description	For Last Full Report See Annual Report for
Jul. 24, 1946	79-526	Jun. 22, 1936	Tiptonville-Obion levee and drainage improvements, TN	1941, p. 943
Jul. 24, 1946	79-526	Jun. 22, 1936	Bayou des Glaises diversion ditch, LA	1946, p. 1029
Jul. 24, 1946	79-526	Jun. 22, 1936	From North Little Rock, AR, to Gillett, AR, on north bank of Arkansas River (portion below Plum Bayou)	1946, p. 1053
Jul. 24, 1946	79-526	Aug. 18, 1941	White River levees, Augusta to Clarendon and De Valls Bluff, AR	1946, p. 1083
Jul. 24, 1946	79-526	Dec. 22, 1944	Boeuf and Tensas Rivers and Bayou Macon, LA	1945, p. 982
Jul. 24, 1946	79-526	Dec. 22, 1944	Big Sunflower River, etc.	1946, p. 1061
Jun. 30, 1948	80-858	Jul. 24, 1946	Devils Swamp barge channel at Baton Rouge, LA (Baton Rouge Harbor)	1948, p. 1059
May 17, 1950	81-516	Jun. 22, 1936	Jonesville, LA	1953, p. 773
May 17, 1950	81-516	Jul. 24, 1946	Lake Pontchartrain-Jefferson Parish, LA	1953, p. 737

TABLE 41-F SUMMARY OF PRESENTLY ESTIMATED FEDERAL FIRST COST OF AUTHORIZED IMPROVEMENTS

Project Title	Estimated Cost[1] Fiscal Year 2001
Completed features[2]	$ 339,236,000
Mississippi River levees	2,121,000,000
Mud Lake Pumping Station, TN	5,460,000[3]
Sec. 6 levees, 1928 Flood Control Act	4,000,000[3]
Channel improvement	3,964,000,000
Atchafalaya Basin, LA	1,801,000,000
Atchafalaya Basin Floodway System, LA	202,000,000
Bayou Cocodrie and Tributaries, LA	20,400,000[3]
Old River, LA	292,273,000
Lower Red River--South Bank Red River levees, LA	23,500,000[3]
Eastern Rapides and South-Central Avoyelles Parishes, LA	50,000,000[3]
Mississippi Delta Region, LA	107,200,000
Tensas Basin, AR and LA	477,631,000
Lower Arkansas River, AR	29,676,000[3]
Grand Prairie Region, AR	208,000,000
Yazoo Basin, MS	1,876,632,000
Lower White River, AR (All except Big Creek & Tribs.)	16,802,000[3]
Lower White River, AR (Big Creek & Tribs.)	55,900,000[3]
Cache River Basin, AR	155,000,000
St. Francis Basin, AR and MO	409,600,000
Francis Bland Floodway Ditch (Eight Mile Creek), AR	10,800,000[3]
L'Anguille River, AR	15,100,000[3]
West Tennessee Tributaries, TN	156,700,000
Harris Fork Creek, TN and KY	14,300,000[3]
Reelfoot Lake-Lake No. 9, TN and KY	(11,000,000)[3]
Reelfoot Lake, TN and KY (Completed)	440,000
Reelfoot Lake-Lake No. 9, TN and KY	10,560,000[3]
West Kentucky Tributaries, KY	26,100,000[3]
Sardis Dam (Dam Safety Assurance), MS	29,200,000
St. Johns Bayou and New Madrid Floodway, MO	64,600,000[4]
Nonconnah Creek, TN and MS	18,975,000[4]
Horn Lake Creek and Tributaries, TN and MS	3,870,000[4]
Wappapello Lake, MO (RAMP)	585,000
Greenville Harbor, MS	32,400,000[3,4]
Memphis Harbor (Ensley Berm), TN	23,100,000[4]
Helena Harbor, Phillips County, AR	32,156,000[4]
Helena, AR, and Vicinity	9,400,000[3,4]
West Memphis, AR, and Vicinity	11,600,000[4,6]
Louisiana State Penitentiary Levee, LA	18,800,000[4,7]
Hickman Bluff, KY	17,510,000[3]
Whiteman's Creek, AR	3,300,000
Reelfoot Lake, TN and KY (Ecosystem Restoration)	20,800,000[3,8]

TABLE 41-F (Continued) SUMMARY OF PRESENTLY ESTIMATED FEDERAL FIRST COST OF AUTHORIZED IMPROVEMENTS

Project Title	Estimated Cost[1] Fiscal Year 2001
Mississippi — Louisiana Estuarine Areas, MS and LA	80,200,000[5]
Bayou Meto, AR	125,000,000
Lower White River:	(14,401,000)
Clarendon Levee, AR	1,800,000
Augusta to Clarendon, AR	12,601,000
Wolf River, TN	6,110,000
Morganza, LA, to Gulf of Mexico	442,000,000
Memphis Harbor, Memphis, TN	38,400,000
TOTAL	$13,385,717,000

1. Inflation projected through the construction period. Harbors; Lake Pontchartrain; Wolf River; completed roads.
2. Includes Bonnet Carre?, Morganza, and New Madrid Floodways; Memphis, Greenville, and Vicksburg on main stem levees; channel construction works; Atchafalaya River and Basin; Wax Lake Outlet; Charenton Canal; Bayou des Glaises diversion channel, Boeuf Basin levees; Grant's Canal; De Valls Bluff, Jonesville, and Des Arc protection works; Baton Rouge Harbor; and miscellaneous features; Teche-Vermilion Basins, LA; Tensas National Wildlife Refuge, LA.
3. Incremental (not projected through the construction period).
4. Authorized by Water Resources Development Act of 1986, Public Law 99-662, Nov. 17, 1986.
5. Authorized by Water Resources Development Act of 1988, Public Law 100-676, Nov. 18, 1988.
6. Locals built their own project.
7. Authorized by Water Resources Development Act of 1999, Public Law 106-53, Aug. 17, 1999.
8. Authorized by Water Resource Development Act of 1999, Public Law 106-53, Aug. 17, 1999 and Report of the Chief of Engineers, Dec. 23, 1999.
9. Reauthorized by Water Resources Development Act of 1999, Public Law 106-53, Aug. 17, 1999.
10. Authorized by Water Resources Development Act of 2000, Public Law 106-541, Dec. 11. 2000.

TABLE 41-G MISSISSIPPI RIVER MAIN STEM CHANNEL IMPROVEMENTS

Location		Operations in 1,000 Cubic Yards Fiscal Year 2001		
District	Mileage Above Head of Passes	Channel Construction	Maintenance	Total
New Orleans				
Baton Rouge Harbor (Devils Swamp)	235	--	260.7	260.7
Main stem channel (Smithland and Wilkinson Pt Crossings)	234-320	--	628.5	628.5
Atchafalaya Basin			1,409.2	1,409.2
Berwick Bay Harbor Three Rivers			115.0	115.0
Old River Lock Forebay and Tailbay	304		244.1	244.1
Vicksburg				
Main stem channel	322-600	--	1,109..0	1,109.0
Vicksburg Harbor	437	--	75.2	75.2
Greenville Harbor	537	--	150.4	150.4
Memphis				
Main stem channel	600-954	--	18,442.8	18,442.8
Memphis Harbor, McKellar Lake	725	--	1,268.2	1,268.2
TOTAL		--	23,683.1	23,683.1

TABLE 41-H BANK REVETMENTS, DIKES, AND FORESHORE PROTECTION: NEW ORLEANS DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
MISSISSIPPI RIVER										
Standard Revetment:										
Venice, LA	12	R	--	--	--	--	--	--	--	49,552
Olga, LA	19	L	--	--	--	--	--	6,365	--	19,053
Lower Childress-Fort Jackson, LA	22	R	--	--	--	--	--	--	--	15,430
Neptune, LA	23	L	--	--	--	--	--	--	--	14,399
Buras, LA	25	R	--	--	--	--	--	--	--	17,283
Tropical Bend, LA	30	R	--	--	--	--	--	--	--	25,012
Bayou Lamoque, LA	33	L	--	--	--	--	--	4,609	--	21,505
Port Sulphur, LA	39	R	--	--	--	--	--	--	--	36,995
Nestor, LA	41	L	--	--	--	--	--	--	--	12,420
Point Michel, LA	44	R	--	--	--	--	--	--	--	22,932
Bohemia, LA	46	L	1,014	60	3,867	--	--	--	--	16,455
Diamond, LA	49	R	--	--	--	--	--	--	--	11,600
Gravolet, LA	51	L	--	--	--	--	--	--	--	23,874
Junior, LA	54	R	--	--	--	--	--	4,251	--	23,599
Harlem, LA	56	L	--	--	--	--	--	--	--	15,148
Myrtle Grove, LA	59	R	--	--	--	--	--	--	--	17,435
Monsecour, LA	61	L	--	--	--	--	--	--	--	13,340
Alliance, LA	62	R	--	--	--	--	--	--	--	17,265
Belair, LA	65	L	--	--	--	--	--	--	--	26,111
Jesuit Bend, LA	68	R	--	--	--	--	--	--	--	24,978
Linwood, LA	71	L	--	--	--	--	--	--	--	14,643
Oak Point, LA	72	R	--	--	--	--	--	--	--	16,426
Scarsdale, LA	75	L	--	--	--	--	--	--	--	17,825
English Turn, LA	78	R	--	--	--	--	--	--	--	21,845
Poydras, LA	82	L	--	--	--	--	--	--	--	45,864
Twelve Mile Point, LA	84	R	--	--	--	--	--	--	--	9,979
Cutoff, LA	88	R	--	--	--	--	--	--	--	23,234

TABLE 41-H (Continued)

BANK REVETMENTS, DIKES, AND FORESHORE PROTECTION: NEW ORLEANS DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Standard Revetment:										
Third district reach, LA	93	L	--	--	--	--	--	--	--	28,372
Algiers Point, LA	95	R	--	--	--	--	--	--	--	12,238
Gouldsboro, LA	96	R	--	--	--	--	--	--	--	4,960
Gretna Bend, LA	97	R	--	--	--	--	--	--	--	10,340
Greenville Bend, LA	100	R	--	--	--	1,223	6,492	--	--	22,045
Carrollton Bend, LA	104	L	--	--	--	--	--	--	--	16,262
Avondale Bend, LA	109	R	--	--	--	--	--	--	--	28,409
Kenner, LA	114	L	--	--	--	--	--	8,738	--	45,492
Luling, LA	119	R	--	--	--	--	--	--	--	44,893
Destrehan, LA	102	L	--	--	--	--	--	--	--	5,409
Good Hope, LA	126	L	--	--	--	--	--	--	--	24,531
Waterford, LA	128	R	1,842	--	10,503	--	--	--	--	23,106
Montz, LA	132	L	--	--	--	1,853	8,068	--	--	17,502
Lucy, LA	136	R	--	--	--	--	--	--	--	19,450
Reserve, LA	138	L	--	--	--	--	--	--	--	23,234
Willow Bend, LA	141	R	--	--	--	--	--	--	--	13,227
Angelina, LA	145	L	--	--	--	--	--	5,233	--	32,762
Vacherie, LA	148	R	--	--	--	--	--	9,012	--	26,025
Belmont, LA	152	L	--	--	--	1,038	4,315	--	--	25,575
Rich Bend, LA	157	R	--	--	--	--	--	--	--	38,498
Romeville, LA	161	L	--	--	--	--	--	--	--	33,986
St. Alice, LA	165	R	--	--	--	--	--	--	--	31,130
Burnside, LA	170	L	--	--	--	--	--	--	--	29,304
Aben, LA	172	R	--	--	--	--	--	--	--	11,700
St. Elmo, LA	174	L	--	--	--	--	--	--	--	12,014
Smoke Bend, LA	177	R	--	--	--	--	--	--	--	18,792
Marchand, LA	180	L	--	--	--	--	--	--	--	19,603
Philadelphia Point, LA	183	R	--	--	--	--	--	--	--	5,379
New River Bend, LA	185	L	--	--	--	--	--	--	--	45,672

TABLE 41-H (Continued)

BANK REVETMENTS, DIKES, AND FORESHORE PROTECTION: NEW ORLEANS DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Standard Revetment:										
White Castle, LA	193	R	--	--	--	--	--	--	--	45,968
St. Gabriel, LA	201	L	--	--	--	--	--	--	--	33,292
Plaquemine Bend, LA	209	R	--	--	--	--	--	7,801	--	45,012
Manchac, LA	215	L	--	--	--	--	--	4,827	--	38,976
Missouri Bend, LA	222	R	--	--	--	--	--	--	--	30,437
Arlington, LA	227	L	--	--	--	--	--	--	--	18,050
Port Allen, LA	231	R	--	--	--	--	--	--	--	17,627
Scotlandville, LA	234	L	--	--	--	--	--	--	--	1,623
Allendale, LA	238	R	822	70	2,695	--	--	5,357	--	29,520
Springfield Bend, LA	244	L	--	--	--	--	--	--	--	25,690
Arboth, LA	250	R	--	--	--	--	--	--	--	23526
Faulkner Lake, LA	253	L	--	--	--	--	--	--	--	18,807
Grand Bay, LA	258	R	--	--	--	--	--	--	--	24,909
Bayou Sara, LA	265	L	--	--	--	--	--	--	--	29,722
Red Store, LA	269	R	--	--	--	--	--	--	--	18,464
Arrow Bend, LA	272	L	--	--	--	--	--	--	--	13,600
Boies Point, LA	275	R	--	--	--	--	--	--	--	16,094
Morganza, LA	279	R	--	--	--	--	--	--	--	20,513
Iowa Point, LA	282	L	--	--	--	--	--	--	--	15,477
Brunette Point, LA	285	R	--	--	--	--	--	--	--	14,335
Greenwood Bend, LA	289	L	--	--	--	--	--	--	--	26,032
Hog Point, LA	296	R	--	--	--	--	--	--	--	37,516
Carr Point, LA	304	R	--	--	--	--	--	--	--	20,725
Above Old River, LA	305	R	--	--	--	--	--	--	--	9,958
Fort Adams, MS	308	L	--	--	--	--	--	--	--	24,206
Point Breeze, LA	313	R	--	--	--	--	--	--	--	13,565
Coochie, LA	317	R	--	--	--	--	--	--	--	17,150

TABLE 41-H (Continued)

BANK REVETMENTS, DIKES, AND FORESHORE PROTECTION: NEW ORLEANS DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Palmetto, MS	322	L	--	--	--	--	--	--	--	34,650
Total Revetment New Orleans District, Mississippi River			3,678 (.70 Miles)	130	17,065	4,114	18,875	56,193	--	1,909,556 (361.66 Miles)
Dikes:										
Profit Island Chute Closure, LA	252	L	--	--	--	--	--	--	--	4,315
Hog Point, LA	299	L	--	--	--	--	--	--	--	6,850
Hog Point Chute Closure	300	R	--	--	--	--	--	--	--	900
Total Dikes New Orleans District, Mississippi River			--							12,065 (2.29 Miles)
OLD RIVER CONTROL										
Standard Revetment:										
Inflow channel	315	L	--	--	--	--	--	--	--	2,415
Inflow channel	315	R	--	--	--	--	--	--	--	4,365
Outflow channel	315	L&R	--	--	--	--	--	--	--	19,891
Auxiliary inflow channel	312	L&R	--	--	--	--	--	--	--	17,200
Auxiliary outflow channel	312	L&R	--	--	--	--	--	--	--	5,790
Total Standard Revetment, Old River			--	--	--	--	--	--	--	49,661 (9.41 Miles)

TABLE 41-H (Continued)

BANK REVETMENTS, DIKES, AND FORESHORE PROTECTION: NEW ORLEANS DISTRICT (FISCAL YEAR 2001)

Location	Below Confluence of Red and Atchafalaya Rivers (Miles)	Bank R or L	Operations This FY Construction					Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
			New Work			Reinforcement				
			Extension (Linear Feet)	Lap (Linear Feet)	(Squares)[1]	(Linear Feet)	(Squares)[1]			
ATCHAFALAYA RIVER										
Standard Revetment:										
Mile One, LA	1	L	--	--	--	--	--	--	--	4,150
Coville Bayou, LA	3	R	--	--	--	--	--	--	--	6,550
Legonier, LA	4	L	--	--	--	--	--	--	--	8,940
Simmesport, LA	6	R	--	--	--	--	--	--	--	12,491
Kuhlman Bayou, LA	7	L	--	--	--	--	--	--	--	5,565
Odenburg, LA	9	R	--	--	--	--	--	--	--	5,375
Jacoby, LA	10	L	--	--	--	--	--	--	--	7,390
Cason, LA	12	R	--	--	--	--	--	--	--	10,798
McCrea, LA	13	L	--	--	--	--	--	4,145	--	6,572
Woodside, LA	14	R	--	--	--	--	--	--	--	13,002
Provosty, LA	17	L	--	--	--	--	--	--	--	9,111
Crooked Bayou, LA	18	R	--	--	--	--	--	--	--	16,246
Mercier, LA	22	L	--	--	--	--	--	--	--	10,478
Barberton, LA	23	R	--	--	--	--	--	--	--	3,592
Evans Point, LA	24	L	--	--	--	--	--	--	--	6,668[2]
Goudeau, LA	26	R	--	--	--	--	--	--	--	3,938
Morris Bayou, LA	27	L	--	--	--	--	--	--	--	5,440
Goodwood, LA	28	R	--	--	--	--	--	--	--	8,505
Red Cross, LA	29	L	--	--	--	--	--	--	--	8,065
Melville LA	30	R	--	--	--	--	--	--	--	5,660
Cross Bayou, LA	31	L	--	--	--	--	--	--	--	6,065[2]
Melville South, LA	33	R	--	--	--	--	--	--	--	13,340
Toles, LA	35	L	--	--	--	--	--	--	--	6,355
Petite Prairie, LA	36	R	--	--	--	--	--	--	--	8,381
Three Mile Bayou, LA	37	R	--	--	--	--	--	--	--	6,330

TABLE 41-H (Continued)

BANK REVETMENTS, DIKES, AND FORESHORE PROTECTION: NEW ORLEANS DISTRICT (FISCAL YEAR 2001)

Location	Below Confluence of Red and Atchafalaya Rivers (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Standard Revetment:										
Holloway Lake, LA	37	L	--	--	--	--	--	--	--	7,085
Bayou Sherman, LA	38	L	--	--	--	--	--	--	--	5,200
Krotz Springs, LA	40	R	--	--	--	--	--	--	--	7,925
Sherburne, LA	43	R	--	--	--	--	--	--	--	10,960
Bayou Big Graw, LA	45	R	5,770	70	21,127	--	--	--	--	14,164
Courtableau, LA	49	R	--	--	--	--	--	--	--	5,374
Coswell Bayou, LA	48	L	--	--	--	--	--	--	--	6,490
Alabama Bayou, LA	50	L	--	--	--	--	--	--	--	9,410
Indian Bauyou	52	R	--	--	--	--	--	--	--	7,098
Happy Town, LA	53	L	--	--	--	--	--	--	--	7,285
Otis Landing, LA	54	R	--	--	--	--	--	--	--	5,251
Morgan City, LA	115	L	--	--	--	--	--	--	--	3,410
Total Standard Revetment Atchafalaya River			5,770 (1.09 Miles)	70	21,127				4,145	288,659 (54.67 Miles)
Dikes:										
Ten Mile Dikes	10	R	--	--	--	--	--	--	--	2,500 (.47 Miles)
LOWER RED RIVER	**Below Confluence of Old River Outflow Channel and Red River (Miles)**									
Standard Revetment:										
Long Lake, LA	10	R	--	--	--	--	--	--	--	6,652
Naples, LA	7	R	--	--	--	--	--	--	--	6,190
Turnbull Island, LA	9	L	--	--	--	--	--	--	--	11,038
Total Standard Revetment			--	--	--	--	--	--	--	23,880 (4.52 Miles)

TABLE 41-H (Continued)

BANK REVETMENTS, DIKES, AND FORESHORE PROTECTION: NEW ORLEANS DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Tons of Stone)	Reinforcement (Linear Feet)	Reinforcement (Tons of Stone)	Maintenance (Tons of Stone)	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Dikes:										
None										
MISSISSIPPI RIVER										
Foreshore Protection:										
Port Allen	228.3	R	--	--	--	--	--	--	--	7,500
Cottage Plantation	222.6	L	--	--	--	--	--	--	--	2,000
Upper Plaquemine Point	210.5	L	--	--	--	--	--	--	--	4,350
Lower Plaquemine Point	207.0	L	--	--	--	--	--	--	--	0
Point Pleasant	201.7	R	--	--	--	--	--	--	--	5,221
Upper Point Clair	196.0	L	--	--	--	--	--	--	--	0
Point Clair	191.0	L	--	--	--	--	--	--	--	10,251
Belle Grove	189.9	R	--	--	--	--	--	--	--	0
Eighty-One Mile Point	176.0	L	--	--	--	--	--	--	--	0
Donaldsonville	174.2	R	--	--	--	--	--	--	--	0
Point Houmas	168.9	R	--	--	--	--	--	--	--	5,400
Sunshine	167.4	L	--	--	--	--	--	--	--	900
Union	166.3	L	--	--	--	--	--	--	--	6,500
Convent	158.3	L	--	--	--	--	--	--	--	11,900
Oak Alley	153.4	R	--	--	--	--	--	--	--	7,800
Lutcher	148.6	L	--	--	--	--	--	--	--	8,910
Wallace	145.5	R	--	--	--	--	--	--	--	10,390
Garyville	140.4	L	--	--	--	--	--	--	--	0
Edgard	138.2	R	--	--	--	--	--	--	--	12,410
Reserve	136.0	L	--	--	--	--	--	--	--	2,200
Waterford	129.0	R	--	--	--	--	--	--	--	500
26 Mile Point	122.8	L	--	--	--	--	--	--	--	1,320
Destrehan	121.0	L	--	--	--	--	--	--	--	0
St. Rose	120.8	L	--	--	--	--	--	--	--	9,830
Lower St. Rose	116.6	L	--	--	--	--	--	--	--	7,050
Ama	115.0	R	--	--	--	--	--	--	--	0

TABLE 41-H (Continued)

BANK REVETMENTS, DIKES, AND FORESHORE PROTECTION: NEW ORLEANS DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction					Maintenance (Tons of Stone)	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
			New Work			Reinforcement				
			Extension (Linear Feet)	Lap (Linear Feet)	(Tons of Stone)	(Linear Feet)	(Tons of Stone)			
Foreshore Protection:										
American Cyanamid	114.8	R	--	--	--	--	--	--	--	4,788
Willswood	113.2	R	--	--	--	--	--	--	--	2,430
Avondale	109.4	R	--	--	--	--	--	--	--	6,500
Twelve Mile Point	108.9	L	--	--	--	--	--	--	--	4,580
Avondale	105.5	R	--	--	--	--	--	--	--	2,070
Nine Mile Point	105.0	R	--	--	--	--	--	--	--	1,760
Greenville	100.0	R	--	--	--	--	--	--	--	6,900
Snowdrift	97.6	R	--	--	--	--	--	--	--	8,450
Gretna-Gouldsboro	96.7	R	--	--	--	--	--	--	--	1,683
Algiers	95.4	R	--	--	--	--	--	--	--	1,548
Holy Cross	92.2	L	--	--	--	--	--	--	--	1,915
Arabi	91.9	L	--	--	--	--	--	--	--	6,130
Quarantine	91.5	R	--	--	--	--	--	--	--	3,805
Huntlee	90.4	R	--	--	--	--	--	--	--	3,139
Chalmette	90.2	L	--	--	--	--	--	--	--	1,260
Norman	90.0	R	--	--	--	--	--	--	--	2,968
Brou	89.5	L	--	--	--	--	--	--	--	3,030
Auora	89.3	R	--	--	--	--	--	--	--	3,700
Blythe Blvd	88.6	R	--	--	--	--	--	--	--	4,345
Upper Stanton	86.5	R	--	--	--	--	--	--	--	12,890
Saxonholm-Docville	86.0	L	--	--	--	--	--	--	--	1,060
Pecan Grove-Story	85.8	L	--	--	--	--	--	--	--	1,910
Story-Allo	84.5	L	--	--	--	--	--	--	--	5,400
Delacroix	84.2	R	--	--	--	--	--	--	--	8,220
Twelve Mile Point	83.5	R	--	--	--	--	--	--	--	1,300
Merrit	83.0	L	--	--	--	--	--	--	--	7,800
Saxonholm-Docville	82.5	L	--	--	--	--	--	--	--	7,700
Naval Depot	82.5	R	--	--	--	--	--	--	--	3,096
Caernarvon	81.2	L	--	--	--	--	--	--	--	13,200

TABLE 41-H (Continued)

BANK REVETMENTS, DIKES, AND FORESHORE PROTECTION: NEW ORLEANS DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Tons of Stone)	Reinforcement (Linear Feet)	Reinforcement (Tons of Stone)	Maintenance (Tons of Stone)	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Foreshore Protection:										
English Turn	79.3	L	--	--	--	--	--	--	--	7,500
Little Rock	78.8	R	--	--	--	--	--	--	--	9,268
St. Claire	78.8	L	--	--	--	--	--	--	--	1,025
Fort St. Leon	78.2	R	--	--	--	--	--	--	--	10,700
Scarsdale	75.5	L	--	--	--	--	--	--	--	16,611
Belle Chase	75.5	R	--	--	--	--	--	--	--	11,500
Stella-Delcour	73.6	L	--	--	--	--	--	--	--	6,405
Oak Point	73.3	R	--	--	--	--	--	--	--	13,766
Promised Land-Woodlawn	70.5	L	--	--	--	--	--	--	--	15,495
Augusta-Live Oak	70.5	R	--	--	--	--	--	--	--	13,135
Jesuit Bend	69.2	R	--	--	--	--	--	--	--	16,454
Fanny-Belair	66.8	L	--	--	--	--	--	--	--	12,400
Sara-Star	66.3	R	--	--	--	--	--	--	--	2,100
Star	65.8	R	--	--	--	--	--	--	--	5,470
Bayhi	64.0	R	--	--	--	--	--	--	--	11,190
Burbridge	63.2	L	--	--	--	--	--	--	--	12,335
Beau-Carlisle	62.3	L	--	--	--	--	--	--	--	6,258
Alliance	62.0	R	--	--	--	--	--	--	--	4,300
St. Rosalie	61.4	R	--	--	--	--	--	--	--	6,976
Monsecour-Poverty Point	60.3	L	--	--	--	--	--	--	--	7,380
Irontown	60.0	R	--	--	--	--	--	--	--	2,298
Myrtle Grove-Woodpark	58.8	R	--	--	--	--	--	--	--	8,450
Harlem	57.0	L	--	--	--	--	--	--	--	15,550
Wood Park-Deer Range	56.0	R	--	--	--	--	--	--	--	17,650
Nero	54.7	L	--	--	--	--	--	--	--	4,450
Deer Range	54.1	R	--	--	--	--	--	--	--	4,220
Upper Point-A-La-Hache	53.5	L	--	--	--	--	--	--	--	9,101
Junior	53.5	R	--	--	--	--	--	--	--	7,811
Point Celeste	52.2	R	--	--	--	--	--	--	--	3,300

TABLE 41-H (Continued)

BANK REVETMENTS, DIKES, AND FORESHORE PROTECTION: NEW ORLEANS DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Tons of Stone)	Reinforcement (Linear Feet)	Reinforcement (Tons of Stone)	Maintenance (Tons of Stone)	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Foreshore Protection:										
Davant	51.5	L	--	--	--	--	--	--	--	10,795
St. Thomas	50.0	L	--	--	--	--	--	--	--	6,430
Woodland	50.0	R	--	--	--	--	--	--	--	14,800
Point-A-La-Hache	48.1	L	--	--	--	--	--	--	--	23,030
Nolan	47.2	R	--	--	--	--	--	--	--	13,400
Socola	46.5	R	--	--	--	--	--	--	--	8,255
Point Michel	44.2	R	--	--	--	--	--	--	--	7,350
Happy Jack	43.0	R	--	--	--	--	--	--	--	18,785
Port Sulphur	39.7	R	--	--	--	--	--	--	--	6,430
Little Texas	39.0	R	--	--	--	--	--	--	--	300
Home Place	37.6	R	--	--	--	--	--	--	--	13,250
Nairn	34.5	R	--	--	--	--	--	--	--	5,915
Sixty Mile Point	32.1	R	--	--	--	--	--	--	--	0
Tropical Bend	31.2	R	--	--	--	--	--	--	--	5,775
Bowers	30.8	R	--	--	--	--	--	--	--	3,836
Empire	29.7	R	--	--	--	--	--	--	--	2,865
Anderson	29.2	R	--	--	--	--	--	--	--	6,100
Fredrick	27.5	R	--	--	--	--	--	--	--	3,820
Buras	26.0	R	--	--	--	--	--	--	--	13,495
Lower Buras	24.0	R	--	--	--	--	--	--	--	8,900
Triumph	22.5	R	--	--	--	--	--	--	--	5,220
Fort Jackson	21.9	R	--	--	--	--	--	--	--	16,690
Grand Prairie	19.2	L	--	--	--	--	--	--	--	1,350
Upper Commander	18.2	R	--	--	--	--	--	--	--	3,180
Commander	18.0	R	--	--	--	--	--	--	--	22,232

TABLE 41-H (Continued)

BANK REVETMENTS, DIKES, AND FORESHORE PROTECTION: NEW ORLEANS DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Tons of Stone)	Reinforcement (Linear Feet)	Reinforcement (Tons of Stone)	Maintenance (Tons of Stone)	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Foreshore Protection:										
Boothville-Commander	16.0	R	--	--	--	--	--	--	--	1,824
Upper Venice	12.0	R	--	--	--	--	--	--	--	14,800
Total Foreshore Protection New Orleans District, Mississippi River			--	--	--	--	--	--	--	749,934 (142.03 Miles)

1. Gross squares articulated concrete mattress (100 square feet).

TABLE 41-I BANK REVETMENTS AND DIKES: VICKSBURG DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
MISSISSIPPI RIVER										
Standard Revetment:										
Bougere Bend, LA	329	R	--	--	--	3,371	9,321	11,418	--	26,055
Dead Mans Bend, MS	335	L	--	--	--	--	--	--	--	33,220
Glasscock Cutoff, MS-LA	342	R	--	--	--	--	--	--	--	26,083
Railroad Landing, MS	346	L	--	--	--	--	--	--	--	16,291
St. Catherine Bend, LA	350	R	--	--	--	--	--	--	--	29,108
Morville, LA	356	R	--	--	--	--	--	--	--	16,917
Natchez Island, MS	357	R	--	--	--	--	--	--	--	2,180
Carthage, MS	361	L	--	--	--	--	--	--	--	20,350
Vidalia Casting Field	363	L	--	--	--	--	--	--	--	2,670
Natchez Front, MS	364	L	--	--	--	--	--	--	--	6,510
Giles Cutoff, LA-MS	366	R	--	--	--	--	--	--	--	12,020
Gibson, LA	371	R	--	--	--	--	--	--	--	26,000
Ashland, LA-MS	374	L	--	--	--	--	--	--	--	33,427
Kempe Bend, LA	383	R	--	--	--	--	--	--	--	30,087
Browns Field, LA	389	R	--	--	--	--	--	--	--	9,280
Goldbottom, MS	392	L	--	--	--	--	--	--	--	30,250
Hardscrabble, LA	398	R	--	--	--	--	--	--	--	22,530
Grand Gulf, MS	403	L	--	--	--	--	--	--	--	57,318
Point Pleasant, MS-LA	413	R	--	--	--	--	--	--	--	32,345
Togo Island, LA	415	R	--	--	--	--	--	--	--	7,080
Lake Karnac, LA-MS	419	L	--	--	--	--	--	--	--	19,260
Diamond Point, LA-MS	423	R	--	--	--	--	--	--	--	19,310
Oakbend, MS	425	L	--	--	--	--	--	--	--	5,342
Reid-Bedford, LA	429	R	--	--	--	--	--	--	--	18,392
Racetrack, MS	433	L	--	--	--	--	--	--	--	13,935
Barge Line Terminal, MS	437	L	--	--	--	--	--	--	--	3,040
Vicksburg Harbor, MS	437	L	--	--	--	--	--	--	--	7,350
Delta Point, LA	437	R	--	--	--	--	--	--	--	7,650

TABLE 41-I (Continued)

BANK REVETMENTS AND DIKES: VICKSBURG DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Standard Revetment:										
King's Point—Opposite Delta Point, LA-MS	439	L	--	--	--	--	--	--	--	19,330
False Point, LA	443	R	1,180	--	4,285	990	5,348	--	--	14,040
Marshall-Brown's Point, LA-MS	446	L	--	--	--	--	--	--	--	19,580
Milliken Bend, LA	453	R	--	--	--	--	--	--	--	46,140
Belle Island, LA-MS	460	L	--	--	--	--	--	--	--	24,160
Goodrich, LA	467	R	--	--	--	--	--	--	--	40,765
Cottonwood Bar, MS	470	R	--	--	--	--	--	--	--	18,580
Filter-Cottonwood, MS	474	L	--	--	--	--	--	--	--	42,112
Hagaman, LA	481	R	--	--	--	--	--	--	--	37,756
Ben Lomond, MS	486	L	--	--	--	--	--	--	--	10,235
Baleshed Towhead-Stack Island, LA-MS	488	R	--	--	--	--	--	--	--	53,214
Lake Providence, LA	489	R	--	--	--	--	--	--	--	11,600
Mayersville, MS	497	L	--	--	--	--	--	--	--	34,992
Sarah Island-Opossum Point, LA-MS	501	R	--	--	--	--	--	6,516	--	26,815
Carolina, MS	507	L	--	--	--	--	--	--	--	11,080
Cracraft, AR	511	R	--	--	--	--	--	--	--	22,210
Worthington, MS-AR	514	R	--	--	--	--	--	--	--	8,350
Walnut Point Kentucky Bend, MS	519	L	--	--	--	--	--	--	--	45,653
American Cutoff, MS-AR	526	L	--	--	--	--	--	--	--	2,980
Sunnyside-Lakeport, AR	530	R	--	--	--	--	--	--	--	33,685
Vancluse, AR	534	R	--	--	--	--	--	--	--	13,016
Island 84, AR-MS	535	L	--	--	--	--	--	--	--	13,475
Warfield Point, MS	537	L	--	--	--	--	--	--	--	4,320
Leland-LaGrange, AR-MS	538	L	--	--	--	--	--	--	--	14,150

TABLE 41-I (Continued)

BANK REVETMENTS AND DIKES: VICKSBURG DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Standard Revetment:										
Spanish Moss, AR	539	R	--	--	--	--	--	--	--	4,580
Tarpley Island, MS	542	R	--	--	--	--	--	--	--	2,000
Miller Bend, MS	544	L	--	--	--	--	--	--	--	29,360
Island 82, AR	546	R	--	--	--	--	--	--	--	3,080
Ashbrook Island, MS	549	R	--	--	--	--	--	--	--	3,455
Arkansas City-Yellow Bend, AR	553	R	2,228	--	5,128	--	--	9,066	--	48,386
Huntington Point, MS	556	L	--	--	--	--	--	--	--	21,205
Pair O'Dice, AR	561	R	--	--	--	--	--	--	--	9,095
Eutaw-Mounds, MS	563	L	--	--	--	--	--	--	--	40,188
Cypress Bend, AR	568	R	--	--	--	--	--	--	--	34,405
Catfish Point, MS	573	L	--	--	--	--	--	--	--	20,075
Ozark, AR-MS	578	R	--	--	--	--	--	--	--	22,015
Prentiss, AR-MS	582	L	--	--	--	--	--	--	--	20,315
Rosedale Bend, AR	585	L	--	--	--	--	--	--	--	4,820
Riverton, MS	586	L	--	--	--	--	--	--	--	12,500
Klondike, AR	588	R	--	--	--	--	--	--	--	23,400
Victoria Bend-Terrene, MS	593	L	--	--	--	--	--	--	--	29,245
Lake Concordia, MS	596	L	2,336	--	8,775	--	--	--	--	9,316
Big Island, AR	598	R	--	--	--	--	--	--	--	16,515
Smith Point, MS	601	L	--	--	--	--	--	--	--	18,185
Dennis, MS	611	L	--	--	--	--	--	--	--	25,195
Cessions, MS	615	L	--	--	--	--	--	--	--	10,910
Total Revetment, Vicksburg District, Mississippi River			5,744 (1.09 Miles)	--	18,188	4,361	14,669	27,000	--	1,510,483 (286.08 Miles)

TABLE 41-I
(Continued)

BANK REVETMENTS AND DIKES: VICKSBURG DISTRICT
(FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Dikes:					(2)			(3)		
Jackson Point, MS	330	L	--	--	--	--	--	--	--	4,306
Buck Island, MS	339	L	--	--	--	--	--	--	--	6,334
Opposite Warnicott Ldg., MS	352	L	--	--	--	--	--	--	--	10,791
Natchez Island, LA-MS	358	R	--	--	--	--	--	--	--	14,608
Opposite Rifle Point, MS	369	L	--	--	--	--	--	--	--	3,214
Rifle Point, LA	369	R	--	--	--	--	--	--	--	4,197
Waterproof Bar, LA	379	R	--	--	--	--	--	--	--	14,580
Spithead Towhead, MS	386	L	--	--	--	--	--	--	--	9,681
Browns Field, LA	388	R	--	--	--	--	--	--	--	11,557
Cottage Bend, LA-MS	389	L	--	--	--	--	--	--	--	14,049
Bondurant Towhead, LA	394	R	--	--	--	--	--	--	--	6,029
Coffee Point, LA	405	R	--	--	--	--	--	--	--	11,925
Yucatan, MS	410	R	4,922	--	--	--	--	--	--	13,932
Togo Island, LA	416	L	--	--	--	--	--	--	--	8,256
Newtown Bend, LA	420	R	--	--	--	--	--	--	--	6,739
Diamond Cutoff, MS	423	L	--	--	--	--	--	--	--	6,711
Below Racetrack, MS	430	L	--	--	--	--	--	--	--	19,378
Racetrack Towhead, MS	431	R	--	--	--	--	--	--	--	15,270
False Point, LA	441	R	--	--	--	--	--	--	--	5,675
Marshall Cutoff, LA	448	R	--	--	--	--	--	--	--	5,166
Below Grand Gulf, MS	399	L	1,208	--	--	--	--	--	--	4,783
Fritz Island, LA	338	R	--	--	--	--	--	--	--	4,160
Forest Home Towhead, LA	449	L	--	--	--	--	--	--	--	15,873
Willow Cutoff, LA	462	R	--	--	--	--	--	--	--	5,197
Tennessee Bar, MS	465	L	--	--	--	--	--	--	--	8,166
Arcadia Point, MS	470	L	--	--	--	--	--	--	--	9,463
Cottonwood Bar, MS	471	R	--	--	--	--	--	--	--	2,406
Point Lookout, LA	478	R	--	--	--	--	--	--	--	2,751

TABLE 41-I (Continued)

BANK REVETMENTS AND DIKES: VICKSBURG DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Dikes:					(2)		(3)			
Ajax Bar, MS	482	L	--	--	--	--	--	--	--	28,152
Ben Lomond, MS	488	L	--	--	--	--	--	--	--	24,667
Baleshed Ldg., MS	493	L	--	--	--	--	--	--	--	15,721
Wilson Point, LA	500	R	--	--	--	--	--	--	--	8,423
Corregidor, MS	505	L	--	--	--	--	--	--	--	6,730
Carolina, AR	509	L	--	--	--	--	--	--	--	2,897
Cracraft Lower, AR	510	R	--	--	--	--	--	--	--	10,329
Cracraft, AR	513	R	--	--	--	--	--	--	--	3,809
Leota, MS	514	L	--	--	--	--	--	--	--	7,571
Island 86, AR	520	R	--	--	--	--	--	--	--	18,477
Seven Oaks, AR	523	R	--	--	--	--	--	--	--	5,829
Walnut Point, MS	525	L	--	--	--	--	--	--	--	4,725
Anconia Chute, AR	527	R	--	--	--	--	--	--	--	7,159
Refuge, MS	528	L	--	--	--	--	--	--	--	19,695
Island 84, AR	532	L	--	--	--	--	--	--	--	12,475
Vancluse, AR	533	R	3,926	--	--	--	--	--	--	3,926
Warfield Point, AR	535	L	--	--	--	--	--	--	--	2,020
Leland Bar, AR-MS	538	R	--	--	--	--	--	--	--	15,086
Leland Neck, AR-MS	540	L	--	--	--	--	--	--	--	4,315
Tarpley Cutoff, MS-AR	540	R	--	--	--	--	--	--	--	10,478
Island 82-Miller Bend, AR-MS	544	R&L	--	--	--	--	--	--	--	13,646
Ashbrook-Miller Bend, AR-MS	547	L&R	--	--	--	--	--	--	--	13,015
Ashbrook Cutoff, MS	549	L	--	--	--	--	--	--	--	8,728
Chicot Ldg., AR	564	R	--	--	--	--	--	--	--	22,381
Catfish Point, MS	571	L	--	--	--	--	--	--	--	5,290
Below Prentiss, MS	580	L	--	--	--	--	--	--	--	12,413
Above Ozark, AR-MS	580	R	--	--	--	--	--	--	--	5,545
Malone Field, AR	585	R	--	--	--	--	--	--	--	7,549

TABLE 41-I (Continued)

BANK REVETMENTS AND DIKES: VICKSBURG DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Dikes:					(2)	(3)				
Terrene, MS	590	L	--	--	--	--	--	--	--	7,921
White River Landing, AR	591	R	--	--	--	--	--	--	--	2,201
Montgomery Towhead, AR	592	R	--	--	--	--	--	--	--	6,071
Victoria Bend, AR	596	R	--	--	--	--	--	--	--	6,736
Smith Point, MS	600	L	--	--	--	--	--	--	--	7,617
Island 70, MS	608	L	--	--	--	--	--	--	--	26,355
Total Dikes, Vicksburg District, Mississippi River			10,056 (1.90 Miles)	--	--	--	--	--	--	615,261 (116.53 Miles)
	Miles Above Mouth									
ARKANSAS RIVER[4]										
Standard Revetment:										
Menard Bend, AR	31	L	--	--	--	--	--	--	--	11,770
Como, AR	34	R	--	--	--	--	--	--	--	11,720
Morgan Bend, AR	36	L	--	--	--	--	--	--	--	5,250
Yancopin, AR	24	R	--	--	--	--	--	--	--	2,800
Total Standard Revetment, Arkansas River			--	--	--	--	--	--	--	31,540 (5.97 Miles)
Dikes:					(2)	(3)				
Hopedale Cutoff, AR	30	R	--	--	--	--	--	--	--	1,848
Morgan Bend, AR	36	L	--	--	--	--	--	--	--	3,658

TABLE 41-I (Continued)

BANK REVETMENTS AND DIKES: VICKSBURG DISTRICT (FISCAL YEAR 2001)

Location	Above Confluence with Miss. River (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Dikes:					(2)	(3)				
Fletcher Bend, AR	39	R	--	--	--	--	--	--	--	2,187
Total Dikes, Arkansas River			--	--	--	--	--	--	--	7,693 (1.46 Miles)
RED RIVER[4]										
Standard Revetment:										
Dupre, LA	69	R	--	--	--	--	--	--	--	2,690
Bringol, LA	73	R	--	--	--	--	--	--	--	4,000
Egg Bend, LA	75	R	--	--	--	--	--	--	--	2,400
Colonel Bend, LA	77	R	--	--	--	--	--	--	--	650
Roxana, LA	83	R	--	--	--	--	--	--	--	3,325
Ryland, LA	88	R	--	--	--	--	--	--	--	3,925
Whittington, LA	89	R	--	--	--	--	--	--	--	2,900
Smith, LA	91	R	--	--	--	--	--	--	--	2,700
Latanier, LA	93	R	--	--	--	--	--	--	--	2,460
Hudson, LA	99	R	--	--	--	--	--	--	--	1,458
Robert, LA	102	R	--	--	--	--	--	--	--	5,500
Alexandria Front, LA	105	R	--	--	--	--	--	--	--	5,280
Callahan, LA	110	R	--	--	--	--	--	--	--	4,000
Cotton, LA	116	R	--	--	--	--	--	--	--	14,700
Rapides, LA	119	R	--	--	--	--	--	--	--	1,030
Boyce, LA	125	R	--	--	--	--	--	--	--	4,548
Total Standard Revetment, Red River			--	--	--	--	--	--	--	61,566 (11.66 Miles)

TABLE 41-I (Continued)

BANK REVETMENTS AND DIKES: VICKSBURG DISTRICT (FISCAL YEAR 2001)

Location	Above Confluence with Miss. River (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Dikes:[6]					(2)			(3)		
Choctaw Bayou Bend, LA.....	71	R	--	--	--	--	--	--	--	2,000
Bringol (Egg Bend), LA	73	R	--	--	--	--	--	--	--	2,477
Egg Bend, LA	75	R	--	--	--	--	--	--	--	900
Cologne Bend, LA	77	R	--	--	--	--	--	--	--	1,850
Echo, LA	78	R	--	--	--	--	--	--	--	1,900
Richardson, LA	79	R	--	--	--	--	--	--	--	2,700
Alexandria, LA	105	R	--	--	--	--	--	--	--	--
Bertrand, LA.....	122	R	--	--	--	--	--	--	--	7,630
Dismal Swamp, LA	24	L	--	--	--	--	--	--	--	1,411
Total Dikes, Red River.....			--	--	--	--	--	--	--	20,868 (3.95 Miles)

1. Gross squares articulated concrete mattress (100 square feet).
2. Linear feet of dike which were raised.
3. Linear feet of dike on which repairs were made.
4. See report on Arkansas River and tributaries, AR and OK, under Little Rock District.
5. Mileages based on 1967 hydrographic survey.
6. Includes all types of dikes and retards.
7. Stone paving only.

TABLE 41-J

BANK REVETMENTS AND DIKES: MEMPHIS DISTRICT (FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
MISSISSIPPI RIVER										
Standard Revetment:										
Big Island, AR	598	R	--	--	--	--	--	--	--	3,905
Scrubgrass Bend, AR	600	R	--	--	--	--	--	--	--	7,315
Henrico, AR	606	R	--	--	--	--	--	--	--	33,310
Cessions Towhead, AR	615	L	--	--	--	--	--	--	--	11,465
Island 67, MS	621	L	--	--	--	--	--	--	--	9,630
Island 68 Bar— Knowlton, AR	622	R	--	--	--	--	--	--	--	26,710
Ludlow, AR	626	R	--	--	--	--	--	--	--	10,390
Rescue Land, AR-MS	629	L	--	--	--	--	--	--	--	27,020
Fair Landing, AR	632	R	--	--	--	--	--	--	--	27,515[2]
Burke Landing, MS	637	L	--	--	--	--	--	--	--	19,070
Island 62, AR	638	R	--	--	--	--	--	--	--	9,030
Island 63, MS	639	L	--	--	--	--	--	--	--	11,514
Island 63 Bar, MS	639	L	--	--	--	--	--	--	--	3,795
Oldtown Bend, AR	644	R	--	--	--	--	--	--	--	26,860
Horseshoe, MS	647	L	--	--	--	--	--	--	--	16,385
Westover, AR	650	R	--	--	--	--	--	--	--	15,640
Delta-Friars Point, MS	665	L	--	--	--	--	--	--	--	30,090
Helena, AR	660	R	--	--	--	--	--	--	--	36,460
Helena Towhead, AR	664	R	--	--	--	--	--	--	--	3,690
Trotters Landing, MS	665	L	--	--	--	--	--	--	--	38,685[2]
Flower Lake, MS	667	L	--	--	--	--	--	--	--	16,385
St. Francis, AR	672	R	--	--	--	--	--	--	--	24,663
Harbert Point, MS	675	L	--	--	--	--	--	--	--	9,065
Walnut Bend, AR	680	R	--	--	--	--	--	--	--	31,070
Mhoon Bend, MS	685	L	4,527	100	12,852	--	--	--	--	44,310
Peters, AR	692	R	--	--	--	--	--	--	--	33,760
Commerce, MS	695	L	--	--	--	--	--	--	--	29,085

TABLE 41-J
(Continued)

BANK REVETMENTS AND DIKES: MEMPHIS DISTRICT
(FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Standard Revetment:										
Porter Lake, AR	700	R	--	--	--	--	--	--	--	34,155
Pickett, MS-AR	703	R	--	--	--	--	--	--	--	12,575
Seyppel, AR	709	R	--	--	--	--	--	--	--	4,830
Norfolk-Star, MS	711	L	--	--	--	--	--	--	--	39,505
Cow Island Bend, AR	714	R	--	--	--	--	--	--	--	22,274
Cow Island Bend (Upper), TN	716	R	--	--	--	--	--	--	--	8,623
Coahoma, TN	717	L	--	--	--	--	--	--	--	9,270
Ensley, TN	723	L	--	--	--	--	--	--	--	46,256
Dismal Point, AR	724	R	--	--	--	--	--	--	--	7,200
Bauxippi-Wyanoke, AR	730	R	--	--	--	--	--	--	--	24,530
Presidents Island, TN	733	L	--	--	--	--	--	--	--	12,755
Hopefield Point, AR-TN	736	R	--	--	--	--	--	--	--	10,360
Loosahatchie-Memphis, TN	737	L	--	--	--	--	--	12,553	--	31,293
Loosahatchie Bar, TN	740	R	--	--	--	--	--	--	--	2,070
St. Clair, AR	742	R	--	--	--	--	--	--	--	2,930
Island 40, TN-AR	744	R	--	--	--	--	--	--	--	30,750
Brandywine, AR-TN	750	R	--	--	--	--	--	--	--	18,010
Shelby Forest, TN	753	L	--	--	--	--	--	--	--	9,545
Dean Island, AR	756	R	--	--	--	--	--	--	--	7,555
Cedar Point-Densford, TN	759	L	--	--	--	--	--	--	--	20,190
Chute of Island 35, TN	764	R	--	--	--	--	--	--	--	30,930
Richardson Ldg, TN	769	L	--	--	--	--	--	--	--	1,415
Lookout Bar, TN	772	R	--	--	--	--	--	--	--	2,990
Lookout, TN	774	R	--	--	--	--	--	--	--	5,005
Sunrise Towhead, TN	776	R	--	--	--	--	--	--	--	18,440
Driver Bar, TN	780	L	--	--	--	--	--	--	--	4,850

TABLE 41-J
(Continued)

BANK REVETMENTS AND DIKES: MEMPHIS DISTRICT
(FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Standard Revetment:										
Lower Bullerton, AR	782	R	--	--	--	--	--	--	--	28,350
Kate Aubrey Towhead-Island 30, TN	786	R	--	--	--	--	--	--	--	30,808
Osceola, AR	786	R	--	--	--	--	--	--	--	1,350[3]
Osceola, AR	786	R	--	--	--	--	--	--	--	5,823
Ashport-Keyes Point, TN	791	L	--	--	--	--	--	--	--	44,232
Kate Aubrey, TN	793	R	--	--	--	--	--	--	--	2,500
Island 26, TN	798	R	--	--	--	--	--	6,592	--	15,690
Bend of Island 25, TN	803	L	--	--	--	--	--	--	--	32,385
Barfield, AR	808	R	--	--	--	--	--	--	--	52,335
Obion-Tamm, TN	819	L	--	--	--	--	--	--	--	53,831
Huffman-Hickman, AR-TN	826	R	--	--	--	--	--	--	--	29,764
Heloise, TN	831	L	--	--	--	--	--	--	--	15,770
Island 18, MO	836	R	--	--	--	--	--	--	--	30,490
Linwood Bend, TN	841	L	--	--	--	--	--	--	--	14,850
Blaker Towhead, TN	845	L	--	--	--	--	--	--	--	18,562
Bells Point, MO	845	R	--	--	--	--	--	--	--	5,420
Gayoso-Caruthersville, MO	848	R	--	--	--	--	--	--	--	25,600
Island 15, TN	851	L	--	--	--	--	--	--	--	3,630
Hathaway Landing, TN	852	L	--	--	--	--	--	--	--	1,000
Robinson Bayou, MO	852	R	--	--	--	--	--	--	--	22,630
Fritz Landing, TN	857	L	--	--	--	--	--	--	--	15,670
Lee Towhead, MO	859	L	--	--	--	--	--	3,862	--	9,640
Bend of Island 14, TN	859	L	--	--	--	--	--	--	--	15,830
Above Lee Towhead, TN	861	L	--	--	--	--	--	--	--	4,943
Little Cypress, MO	864	R	--	--	--	--	--	--	--	40,140

TABLE 41-J
(Continued)

BANK REVETMENTS AND DIKES: MEMPHIS DISTRICT
(FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Standard Revetment:										
Merriwether-Cherokee, TN	869	L	--	--	--	--	--	11,040	--	41,058
Linda, MO	876	R	--	--	--	--	--	8,494	--	20,000
Below Toney's Towhead, TN	879	L	--	--	--	--	--	--	--	20,895
Toney's Towhead, KY-TN	882	L	--	--	--	--	--	--	--	13,640
Kentucky Point, KY	887	L	--	--	--	--	--	--	--	7,960
New Madrid Bar, KY	888	R	--	--	--	--	--	--	--	16,825
New Madrid Bend, MO	889	R	--	--	--	--	--	--	--	43,262
La Forge, MO	892	R	--	--	--	--	--	--	--	24,930
Slough Landing Neck, TN-KY	899	L	--	--	--	--	--	--	--	37,520
Winchester Towhead, MO	900	R	--	--	--	--	--	--	--	5,540
Island 9, KY-TN	905	L	--	--	--	--	--	--	--	33,585
Milton Bell, MO	908	R	--	--	--	--	--	--	--	16,600
Chute of Island 8, KY	913	L	--	--	--	--	--	--	--	12,620
Bend of Island 8, MO	914	R	--	--	--	--	--	--	--	39,945
Island 8, KY	914	R	--	--	--	--	--	--	--	18,515
Hickman-Reelfoot, KY	919	L	--	--	--	--	--	--	--	46,399
Beckwith Bend, MO	924	R	--	--	--	--	--	4,940	--	18,203
Williams, KY	927	L	--	--	--	--	--	--	--	10,015
Wolf Island, KY	934	R	--	--	--	--	--	--	--	22,495
Columbus, KY	937	L	--	--	--	--	--	--	--	7,395
Belmont, MO	938	R	--	--	--	--	--	--	--	5,785
Island 3 and 4, KY	940	R	--	--	--	--	--	--	--	19,970
Campbell, KY	943	L	--	--	--	--	--	--	--	6,865
Pritchard, MO	948	R	--	--	--	--	--	6,135	--	15,045

TABLE 41-J
(Continued)

BANK REVETMENTS AND DIKES: MEMPHIS DISTRICT
(FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Standard Revetment:										
Mayfield Creek, KY	949	L	--	--	--	--	--	--	--	8,935
Wickliffe, KY	953	L	--	--	--	--	--	--	--	16,150
Cache-Cairo, IL (Ohio River)	958	R	--	--	--	--	--	--	--	29,927
Total Revetment, Memphis District, Mississippi River			4,527 (0.86 Miles)	100	12,852	--	--	53,616	--	2,056,445 (389.48 Miles)
Dikes:					([8])			([6])		
Henrico, AR	603	R	--	--	--	--	--	--	--	9,080
Below Knowlton, AR	616	R	--	--	--	--	--	--	--	20,670
Island 67, MS	621	L	--	--	--	--	--	--	--	4,320
Below Ludlow, AR	624	R	--	--	--	--	--	--	--	5,040
Sunflower, AR	627	L	--	--	--	--	--	--	--	5,520
Island 64, AR	630	R	--	--	--	--	--	500	--	7,330
Rescue Landing, MS	631	L	--	--	--	--	--	--	--	2,530
Island 62, AR	638	R	--	--	--	--	--	--	--	23,180
Island 63 Bar, MS	639	L	--	--	--	--	--	--	--	2,600
Island 63, MS	640	L	--	--	--	--	--	--	--	5,640
Kangaroo Point, AR	649	R	--	--	--	--	--	--	--	6,580
Friars Point, MS	652	L	--	--	--	--	--	--	--	6,870
Montezuma Bar, MS	657	L	--	--	--	--	--	300	--	17,970
Montezuma Towhead, AR	656	R	--	--	--	--	--	--	--	6,700
Prairie Point, AR	668	R	--	--	--	--	--	200	--	10,391
Flower Lake, MS	668	L	--	--	--	--	--	600	--	11,060
Walnut Bend, AR	681	R	--	--	--	--	--	--	--	6,390
St. Francis Towhead, MS	671	L	--	--	--	--	--	--	--	3,380

TABLE 41-J
(Continued)

BANK REVETMENTS AND DIKES: MEMPHIS DISTRICT
(FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Dikes:					([8])			([6])		
Below Walnut Bend, AR	676	R	--	--	--	--	--	--	--	8,840
Bordeaux Point, MS	681	L	--	--	--	--	--	400	--	10,730
Peters, AR	693	R	--	--	--	--	--	700	--	7,830
Commerce, MS	694	L	--	--	--	--	--	--	--	10,745
Basket Bar, AR	696	R	--	--	--	--	--	125	--	5,810
Buck Island, MS	700	L	--	--	--	--	--	600	--	4,705
Porter Lake, AR	701	R	--	--	--	--	--	1,100	--	23,115
Pickett, MS	704	L	--	--	--	--	--	200	--	10,080
Seyppel, AR	706	R	--	--	--	--	--	--	--	16,230
Cat Island, AR	710	R	--	--	--	--	--	--	--	15,590
Coahoma, TN	718	L	--	--	--	--	--	--	--	4,640
Armstrong, AR-TN	720	R	--	--	--	--	--	--	--	18,690
Below Ensley, TN	721	L	--	--	--	--	--	--	--	915
Dismal Point, AR	724	R	--	--	--	--	--	800	--	30,950
Engineers Bar, AR	734	R	--	--	--	--	--	--	--	4,155
Hopefield Point, AR	736	R	--	--	--	--	--	--	--	5,350
Memphis Front, TN	736	L	--	--	--	--	--	--	--	6,300
Robinson Crusoe, TN	738	R	--	--	--	--	--	800	--	21,939
Loosahatchie Bar, TN	739	R	--	--	--	--	--	--	--	3,950
Sycamore Chute, AR-TN	741	R	--	--	--	--	--	--	--	6,725
Above Loosahatchie, TN	742	L	--	--	--	--	--	--	--	12,295
Redman Point, AR	743	R	--	--	--	--	--	--	--	7,750
Randolph Point, TN	747	L	--	--	--	--	--	150	--	16,940
Poker Point, AR	748	R	--	--	--	--	--	--	--	8,060
Shelby Forest, TN	751	L	--	--	--	--	--	--	--	5,540
Corona Bar, TN-AR	755	R	--	--	--	--	--	--	--	9,400
Densford, TN	757	L	--	--	--	--	--	--	--	7,780
Cedar Point, TN	759	L	--	--	--	--	--	--	--	2,890
Below Richardson Landing, TN	767	L	--	--	--	--	--	--	--	5,950

TABLE 41-J
(Continued)

BANK REVETMENTS AND DIKES: MEMPHIS DISTRICT
(FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Dikes:					([8])			([6])		
Lookout, TN-AR	771	R	--	--	--	--	--	--	--	12,865
Plum Point, TN	784	L	--	--	--	--	--	800	--	10,195
Lake Neark, AR	786	R	--	--	--	--	--	--	--	2,545
Island 30	787	R	--	--	--	--	--	--	--	5,485
Kate Aubrey, TN	791	R	--	--	--	--	--	--	--	11,270
Keyes Point, TN	791	L	--	--	--	--	--	--	--	29,830
Ashport-Goldust, TN-AR	795	R	--	--	--	--	--	--	--	17,330
Forked Deer, TN	798	L	--	--	--	--	--	--	--	8,550
Island 25, AR	804	R	--	--	--	--	--	--	--	5,450
Nebraska Point, TN	808	L	--	--	--	--	--	--	--	12,149
Below Tamm Bend, TN	813	L	--	--	--	--	--	--	--	8,300
Wrights Point, AR	820	R	--	--	--	--	--	1,600	--	34,775
Island 21, Chute, TN	824	L	--	--	--	--	--	--	--	3,170
Head of Island 21, TN	828	L	--	--	--	--	--	200	--	15,540
Island 20, MO-TN	831	R	--	--	--	--	--		--	21,969
Island 18, TN	837	L	--	--	--	--	--	--	--	8,670
Tennemo, TN	842	L	--	--	--	--	--	--	--	8,240
Blaker Towhead, TN	843	L	--	--	--	--	--	800	--	4,080
Caruthersville-Linwood Bend, MO	844	R	--	--	--	--	--	--	--	30,590
Opposite Carthersville, TN	846	L	--	--	--	--	--	--	--	3,300
Sandy Hook, TN	850	R	--	--	--	--	--	--	--	2,350
Island 15, TN	851	L	--	--	--	--	--	--	--	8,830
Robinson Bayou, MO	853	R	--	--	--	--	--	--	--	10,768
Hathaway, TN	854	L	--	--	--	--	--	--	--	27,355
Island 15 Neck, TN	854	L	--	--	--	--	--	1,850	--	21,100
Above Lee Towhead, TN	859	L	--	--	--	--	--	--	--	1,300
Below Cherokee, TN	866	L	--	--	--	--	--	--	--	6,230
Stewart Towhead, MO	871	R	--	--	--	--	--	--	--	19,440

TABLE 41-J
(Continued)

BANK REVETMENTS AND DIKES: MEMPHIS DISTRICT
(FISCAL YEAR 2001)

Location	Above Head of Passes (Miles)	Bank R or L	Operations This FY Construction: New Work: Extension (Linear Feet)	New Work: Lap (Linear Feet)	New Work: (Squares)[1]	Reinforcement (Linear Feet)	Reinforcement (Squares)[1]	Maintenance (Squares)[1]	Non-Operative Since Prior FY (Linear Feet)	Operative Thru This FY (Linear Feet)
Dikes:					([8])			([6])		
Ruddles Point, MO	874	R	--	--	--	--	--	--	--	8,130
Island 11, MO	882	R	--	--	--	--	--	--	--	14,330
New Madrid Bend, MO	887	R	--	--	--	--	--	--	--	1,715
Kentucky Point, KY	887	L	--	--	--	--	--	--	--	15,610
Morrison Towhead, MO	890	R	--	--	--	--	--	--	--	1,070
Hotchkiss Bend, MO	895	R	--	--	--	--	--	1,200	--	14,208
Slough Landing, KY	896	L	--	--	--	--	--	--	--	5,065
Below Island 9, TN	901	L	--	--	--	--	--	600	--	21,989
Donaldson Point, MO	905	R	--	--	--	--	--	4,000	--	22,975
Island 9, KY	906	L	--	--	--	--	--	--	--	7,010[5]
Island 7 - Island 8, MO-KY	917	R	--	--	--	--	--	--	--	14,795
Below Williams, KY	925	L	--	--	--	--	--	--	--	3,640
Moore Island, KY-MO	929	R	--	--	--	--	--	--	--	7,925
Above Williams, KY	930	L	--	--	--	--	--	--	--	1,150
Wolf Island Bar, KY	933	L	--	--	--	1,350	--	--	--	12,260
Campbell, KY	942	L	--	--	--	--	--	--	--	2,610
Pritchard, MO	944	R	--	--	--	--	--	--	--	9,390
Island 1, KY	948	L	--	--	--	--	--	--	--	17,345
Total Dikes Memphis District, Mississippi River			--	--	--	1,350	--	17,525	--	981,583 (185.90 Miles)

1. Gross squares articulated concrete mattress (100 square feet).
2. Changed to correct previous errors.
3. Lumber mattress revetment.
4. Rock Groins.
5. Linear feet of triangular frame retards and pile dikes.
6. Linear feet of dike on which repairs were made.
7. Stone paving only.
8. Linear feet of dike which were raised.

TABLE 41-K

PROJECT LEVEES: NEW ORLEANS DISTRICT
(FISCAL YEAR 2001)

Location	Levees and Floodwalls (Miles)					Berm[1] (Miles)				Surfaced Roads on Levees (Miles)			
		Built to Approved Grade and Section											
	Authorized for System	Total in Place This FY	This FY	Total Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Complete Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Total Complete Thru This FY	Currently Under Construction
Main Stem Levees													
Mississippi River Levees													
Fifth Louisiana Levee District	(16.8)	(16.8)	(--)	(13.3)	(--)	(--)	(--)	(--)	(--)	(15.5)	(--)	(15.5)	(--)
Levees	15.5	15.5	--	12.0	--	--	--	--	--	15.5	--	15.5	--
Old River structures and levees	1.3	1.3	--	1.3	--	--	--	--	--	--	--	--	--
Atchafalaya Basin Levee District	(126.3)	(126.3)	--	(126.3)	(--)	(1.0)	(--)	(1.0)	(--)	(118.7)	(--)	(118.7)	(--)
Levees	118.7	118.7	--	118.7	--	1.0	--	1.0	--	118.7	--	118.7	--
Morganza structure and levee	0.8	0.8	--	0.8	--	--	--	--	--	--	--	--	--
Morganza forebay levee	6.7	6.7	--	6.7	--	--	--	--	--	--	--	--	--
Port Allen lock	0.1	0.1	--	0.1	--	--	--	--	--	--	--	--	--
Lafourche Basin Levee District Levees	61.7	61.7	--	61.7	--	0.1	--	0.1	--	61.7	--	61.7	--
Plaquemines West Levee District Levees	37.9	37.9	--	37.9[2]	--	--	--	--	--	37.9	--	37.9	--
Buras Levee District	(34.1)	(34.1)	--	(27.8)	(--)	(--)	(--)	(--)	(--)	(34.0)	(--)	(34.0)	(--)
Levees	34.0	34.0	--	27.7[2]	--	--	--	--	--	34.0	--	34.0	--
Empire lock	0.1	0.1	--	0.1	--	--	--	--	--	--	--	--	--
Baton Rouge front levees	2.1	2.1	--	1.9	--	--	--	--	--	2.1	--	2.1	--
Pontchartrain Levee District	(124.9)	(124.9)	(--)	(121.3)	(--)	(0.1)	(--)	(--)	(--)	(110.8)	(--)	(110.8)	(--)
Levees	110.8	110.8	3.8	107.2	--	0.1	--	--	--	110.8	--	110.8	--
Bonnet Carre guide levees	11.3	11.3	--	11.3	--	--	--	--	--	--	--	--	--
Bonnet Carre forebay levee	1.3	1.3	--	1.3	--	--	--	--	--	--	--	--	--
Bonnet Carre structure	1.5	1.5	--	1.5	--	--	--	--	--	--	--	--	--
East Jefferson Levee District Levees	11.6	11.6	--	10.8	--	--	--	--	--	11.6	--	11.6	--
West Jefferson Levee District	(20.0)	(20.0)	--	(20.0)	(--)	(--)	(--)	(--)	(--)	(19.9)	(--)	(19.9)	(--)
Levees	19.8	19.8	--	19.8	--	--	--	--	--	19.8	--	19.8	--
Floodwalls	0.1	0.1	--	0.1	--	--	--	--	--	0.1	--	0.1	--
Harvey Canal Lock	0.1	0.1	--	0.1	--	--	--	--	--	--	--	--	--

TABLE 41-K
(Continued)

PROJECT LEVEES: NEW ORLEANS DISTRICT
(FISCAL YEAR 2001)

Location	Levees and Floodwalls (Miles)					Berm[1] (Miles)				Surfaced Roads on Levees (Miles)			
		Built to Approved Grade and Section											
	Authorized for System	Total in Place This FY	This FY	Total Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Complete Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Total Complete Thru This FY	Currently Under Construction
Orleans Levee District	(27.2)	(27.2)	(--)	(24.9)	(--)	(--)	(--)	(--)	(--)	(18.4)	(--)	(18.4)	(--)
Left descending, east bank	(13.3)	(13.3)	(--)	(11.0)	(--)	(--)	(--)	(--)	(--)	(4.6)	(--)	(4.6)	(--)
Levees	4.6	4.6	--	2.3	--	--	--	--	--	4.6	--	4.6	--
Floodwalls	8.6	8.6	--	8.6	--	--	--	--	--	--	--	--	--
IHNC lock	0.1	0.1	--	0.1	--	--	--	--	--	--	--	--	--
Right descending, west bank	(13.9)	(13.9)	(--)	(13.9)	(--)	(--)	(--)	(--)	(--)	(13.8)	(--)	(13.8)	(--)
Levees	13.8	13.8	--	13.8	--	--	--	--	--	13.8	--	13.8	--
Algiers Canal lock	0.1	0.1	--	0.1	--	--	--	--	--	--	--	--	--
Lake Borgne Basin Levee District Levees	11.6	11.6	--	11.6	--	--	--	--	--	11.6	--	11.6	--
Grand Prairie Levee District Levees	37.4	37.4	–	37.4	–	--	--	--	--	37.4	--	37.4	--
Total Mississippi River	511.6	511.6	3.8	494.9	--	1.2	--	1.1	--	479.6	--	479.6	--
Other Levees Included in Main Stem Louisiana State Pen Levee	12.1	12.1	7.3	73	4.8	--	--	--	--	--	--	--	--
Atchafalaya Basin													
Atchafalaya River and Bayou des Glaises	(148.4)	(148.4)	(--)	(143.9)	(--)	(--)	(--)	(--)	(--)	(148.4)	(--)	(148.4)	(--)
East Bank Atchafalaya River	52.5	52.5	--	52.5	--	--	--	--	--	52.5	--	52.5	--
Bayou des Glaises	7.9	7.9	--	7.9	--	--	--	--	--	7.9	--	7.9	--
West bank Atchafalaya River	60.1	60.1	--	55.6	--	--	--	--	--	60.1	--	60.1	--
Simmesport Ring	1.6	1.6	--	1.6	--	--	--	--	--	1.6	--	1.6	--
Melville Ring	4.1	4.1	--	4.1	--	--	--	--	--	4.1	--	4.1	--
Krotz Springs Ring	1.7	1.7	--	1.7	--	--	--	--	--	1.7	--	1.7	--
Mansura Hills to Hamburg	20.5	20.5	--	20.5	--	--	--	--	--	20.5	--	20.5	--
West protection levee, Hamburg to Berwick drain age canal via Calumet	128.7	128.7	0.9	110.9	--	--	--	--	--	128.7	--	128.4	--
Levees west of Berwick, Berwick drainage canal to Charenton drainage canal	56.5	56.5	--	29.0	--	--	--	--	--	56.5	--	56.5	--
Morganza upper guide levee	8.9	8.9	--	8.9	--	--	--	--	--	8.9	--	8.9	--

TABLE 41-K
(Continued)

PROJECT LEVEES: NEW ORLEANS DISTRICT
(FISCAL YEAR 2001)

Location	Levees and Floodwalls (Miles)					Berm[1] (Miles)				Surfaced Roads on Levees (Miles)			
		Built to Approved Grade and Section											
	Authorized for System	Total in Place This FY	This FY	Total Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Complete Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Total Complete Thru This FY	Currently Under Construction
East Protection levee, Morganza to Cutoff Bayou, including 19.5 miles of Morganza lower guide levee	106.7	106.7	--	95.7	--	--	--	--	--	105.0	--	86.0	--
Total Atchafalaya Basin	449.2	449.2	0.9	388.4	--	--	--	--	--	447.5	--	428.2	--
Total Other Levees Included in Main Stem	461.3	461.3	8.2	395.7	4.8	--	--	--	--	447.5	--	428.2	--
Total-Main Stem Leaves	972.9	972.9	12.0	890.6	4.8	1.2	--	1.1	--	927.1	--	907.8	--
TRIBUTARY LEVEES IN MR&T PROJECT													
Lake Pontchartrain, LA	(17.4)	(17.4)	(--)	(17.4)	(--)	(--)	(--)	(--)	(--)	(17.4)	(--)	(17.4)	(--)
Item A levees	5.0	5.0	--	5.0	--	--	--	--	--	5.0	--	5.0	--
Item B levees	10.1	10.1	--	10.1	--	--	--	--	--	10.1	--	10.1	--
Item C levees	2.3	2.3	--	2.3	--	--	--	--	--	2.3	--	2.3	--
Total Tributary Levees in MR&T Project	17.4	17.4	--	17.4	--	--	--	--	--	17.4	--	17.4	--
G	990.3	990.3	12.0	908.0	4.8	1.2	--	1.1	--	944.5	--	925.2	--

1. Landside seepage berms only.
2. Changed to correct previous error.

TABLE 41-L

PROJECT LEVEES: VICKSBURG DISTRICT (FISCAL YEAR 2001)

Location	Levees and Floodwalls (Miles)					Berm[1] (Miles)				Surfaced Roads on Levees (Miles)			
		Built to Approved Grade and Section											
	Authorized for System	Total in Place This FY	This FY	Total Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Complete Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Total Complete Thru This FY	Currently Under Construction
MAIN STEM LEVEES													
Mississippi River Levees													
East bank in Mississippi	178.3[4]	178.3	--	109.1	18.1	156.9	--	135.0	--	174.2	--	174.2	--
Greenville Harbor dikes	7.8	7.8	--	7.8	--	--	--	--	--	2.7	--	2.7	--
West bank in Arkansas	75.6	75.6	--	55.0	--	61.3	--	54.3	--	75.4	--	75.4	--
West bank in Louisiana	198.7	198.7	7.7	86.4	4.8	91.0	--	74.9	--	197.8	--	197.8	--
Total Mississippi River Levees	460.4	460.4	7.7	258.3	22.9	309.2	--	264.2	–	450.1	--	450.1	--
Other Levees Included in Main Stem													
Lower Red River-South Bank Red River levees	(59.2)	(59.2)	(--)	(59.2)	(--)	(--)	(--)	(--)	(--)	(59.2)	(--)	(59.2)	(--)
Hotwells to Moncla, LA, levees	59.2	59.2	--	59.2	--	--	--	--	--	59.2	--	59.2	--
Arkansas River, South Bank	85.4	85.4	--	85.4	--	24.7	--	24.7	--	84.1	--	81.1	--
Total Other Levees Included in Main Stem	144.6	144.6	--	144.6	--	24.7	--	24.7	--	143.3	--	140.3	--
Total—Main Stem Levees	605.0	605.0	7.7	402.9	22.9	333.9	--	288.9	--	593.4	--	590.4	--
TRIBUTARY LEVEES IN MR&T PROJECT													
Arkansas River, North bank	61.5[5]	56.2	--	56.2	--	8.3	--	8.3	--	47.4	--	47.4	--
Red River Backwater Levees	263.6	237.3	--	219.7	12.9	--	--	--	--	249.0	--	219.7	12.9

TABLE 41-L
(Continued)

PROJECT LEVEES: VICKSBURG DISTRICT
(FISCAL YEAR 2001)

Location	Levees and Floodwalls (Miles)					Berm[1] (Miles)				Surfaced Roads on Levees (Miles)			
		Built to Approved Grade and Section											
	Authorized for System	Total in Place This FY	This FY	Total Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Complete Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Total Complete Thru This FY	Currently Under Construction
Yazoo River Basin	624.1)	(425.3)	(--)	(237.6)	(--)	(--)	(--)	(--)	(--)	(624.1)	(--)	(338.9)	--
Headwater	527.5	373.7	--	186.0	--	--	--	--	--	527.5	--	299.9	--
Backwater	96.6	51.6	--	51.6	--	--	--	–	--	96.6	--	39.0	--
Total Tributary Levees in MR&T Project	949.2	718.8	--	513.5	12.9	8.3	--	8.3	--	920.5	--	606.0	12.9
GRAND TOTAL	1,554.2	1,323.8	7.7	916.4	35.8	342.2	--	297.2	--	1,513.9	--	1,196.4	12.9

1. Landside seepage berms only.
2. Levee that has adequate freeboard based on the refined 1973 MR&T project flood flow line for the Mississippi River. Levees with more than 2 feet of freeboard are considered adequate.
3. Subject to change as planning progresses. Does not include existing berms which need restudy.
4. Includes 1.4 miles of concrete floodwall and 0.3 mile of levee on Vicksburg city front.
5. Includes 5.3 miles for Gillett new levee.
6. Relief wells used in place of berms.

TABLE 41-M

PROJECT LEVEES: MEMPHIS DISTRICT (FISCAL YEAR 2001)

Location	Levees and Floodwalls (Miles)					Berm[5] (Miles)				Surfaced Roads on Levees (Miles)			
		Built to Approved Grade and Section											
	Authorized for System	Total in Place This FY	This FY	Total Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Complete Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Total Complete Thru This FY	Currently Under Construction
MAIN STEM LEVEES													
Mississippi River													
Mounds, IL	3.9	3.9	--	3.9	--	0.5	--	0.5	--	3.6	--	3.6	--
Mound City, IL	2.7	2.7	--	2.7	--	2.5	--	2.5	--	1.1	--	1.1	--
Cairo Drainage District, IL	13.8[2]	13.8	--	7.8	--	1.6	--	--	--	8.5	--	8.5	--
City of Cairo, IL	6.2	6.2	--	2.2[4]	--	4.4	--	2.0	--	4.0	--	3.5	--
Little River Drainage District, MO	19.3	19.3	--	19.3	--	9.7	--	4.9	--	19.3	--	19.3	--
Levee District No. 2, Scott County, MO	13.8	13.8	--	13.8	--	4.8	--	4.8	--	13.8	--	13.8	--
Levee District No. 3, Mississippi County, MO	26.0	26.0	--	26.0	--	12.9	--	4.9	--	26.0	--	26.0	--
St. Johns Levee and Drainage District, MO	59.0[3]	58.7	--	58.2	--	9.2	--	--	--	46.9	--	46.1	--
St. Francis Levee District of MO	55.7	55.7	--	48.7[4]	--	23.0	--	12.0	--	55.1	--	55.1	--
City of Hickman, KY	1.4	1.4	--	1.4	--	--	--	--	--	0.5	--	--	--
Board of Levee Commissioners Fulton, County, KY	16.7	16.7	--	16.7	--	15.1	--	11.4	--	16.3	--	16.3	--
Reelfoot Levee District of Lake and Obion Counties, TN	4.5	4.5	--	4.5	--	0.6	--	0.3	--	4.5	--	4.3	--
Madrid Bend Levee District, Lake Co., TN	5.2	5.2	--	5.2	--	--	--	--	--	5.2	--	5.2	--
Lake County Levee and Drainage District, TN	17.0	17.0	--	17.0	--	9.6	--	9.4	--	17.0	--	17.0	--
Dyer County Levee and Drainage District No. 1, TN	21.3	21.3	--	21.3	--	1.3	--	0.4	--	21.3	--	21.3	--
Tipton-Obion levee extension	6.5	--	--	--	--	--	--	--	--	6.5	--	--	--
St. Francis Levee District of AR	156.7	156.7	--	153.2	--	89.2	--	88.4	--	156.7	--	156.7	--
Helena Improvement District No. 1, AR	5.3	5.3	--	5.3	--	2.4	--	2.4	--	4.7	--	4.2	--
Cotton Belt Levee District No. 1, AR.	23.9	23.9	--	23.9	--	19.4	--	19.4	--	23.9	--	23.9	--

TABLE 41-M
(Continued)

PROJECT LEVEES: MEMPHIS DISTRICT
(FISCAL YEAR 2001)

Location	Levees and Floodwalls (Miles)					Berm[5] (Miles)				Surfaced Roads on Levees (Miles)			
		Built to Approved Grade and Section											
	Authorized for System	Total in Place This FY	This FY	Total Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Complete Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Total Complete Thru This FY	Currently Under Construction
Laconia Drainage and Levee District Phillips County, AR	20.5	20.5	--	20.5	--	11.5	--	11.5	--	20.5	--	20.5	--
Laconia Levee District No. 1 of Deshna County, AR	18.1	18.1	--	18.1	--	12.6	--	9.2	--	16.5	--	16.5	--
Laconia Circle Special Drainage District of Deshna County, AR	6.6	6.6	--	6.6	--	--	--	--	--	--	--	--	--
Yazoo-Mississippi Delta Levee District, MS	93.6	93.6	--	93.6	--	88.6	--	88.6	--	93.6	--	93.6	--
Madrid Bend L.D., Fulton Co., KY	4.8	4.8	--	4.8	--	--	--	--	--	4.8	--	4.8	--
Birds Point-New Madrid setback levee, MO	35.3	35.3	--	35.3	--	23.8	--	--	--	35.3	--	35.3	--
Total Mississippi River	637.8	631.0	--	607.5	--	342.7	--	272.6	--	605.6	--	596.6	--
TOTAL MAIN STEM LEVEES	637.8	631.0	--	607.5	--	342.7	--	272.6	--	605.6	--	596.6	--
TRIBUTARY LEVEES IN MR&T PROJECT													
St. Francis River	(308.2)	(302.9)	--	(302.9)	--	--	--	--	--	(301.0)	--	(133.5)	--
East bank	159.5	156.2	--	156.2	--	--	--	--	--	156.7	--	94.7	--
West bank	148.7	146.7	--	146.7	--	--	--	--	--	144.3	--	38.8	--
Little River	(130.1)	(130.1)	--	(130.1)	--	--	--	--	--	(128.9)	--	(94.5)	--
East bank (left)	40.7	40.7	--	40.7	--	--	--	--	--	40.7	--	40.1	--
West bank	35.1	35.1	--	35.1	--	--	--	--	--	35.1	--	23.7	--
Elk Chute	39.9	39.9	--	39.9	--	--	--	--	--	39.7	--	17.3	--
West Basin and middle valley	14.4	14.4	--	14.4	--	--	--	--	--	13.4	--	13.4	--
Lower White River	(95.6)	(85.9)	--	(84.1)	--	--	--	--	--	(94.0)	(--)	(81.0)	--
White River backwater levee	40.2	40.2	--	40.2	--	--	--	--	--	38.8	--	38.8	--
Augusta to Clarendon	49.2	39.5	--	39.5	--	--	--	--	--	49.2	--	36.2	--
Clarendon levee	6.2	6.2	--	4.4	--	--	--	--	--	6.0	--	6.0	--

TABLE 41-M
(Continued)

PROJECT LEVEES: MEMPHIS DISTRICT
(FISCAL YEAR 2001)

Location	Levees and Floodwalls (Miles)					Berm[5] (Miles)				Surfaced Roads on Levees (Miles)			
		Built to Approved Grade and Section											
	Authorized for System	Total in Place This FY	This FY	Total Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Complete Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Total Complete Thru This FY	Currently Under Construction
Memphis Harbor.....	10.5	10.5	--	10.5	--	7.0	--	7.0	--	10.5	--	10.5	--
Total Tributary Levees in MR&T Project	544.4	529.4	--	527.6	--	7.0	--	7.0	--	534.4	--	319.5	--
G	1,182.2	1,160.4	--	1,135.0	--	349.7	--	279.6	--	1,140.0	--	916.1	--

1. Subject to change as planning progresses.
2. Includes 5.1 miles of Cache River levee. This levee was enlarged to 1928 grades with Federal funds, but since that time has been classified as a secondary levee.
3. Includes 12.1 miles of Farrenburg levee. This levee was enlarged to 1928 grades with Federal funds, but since that time has been classified as a secondary levee.
4. Deficient in freeboard as a result of 1996 Revised Project Design Flood flowline.
5. Landside seepage berms only.
6. Changed to correct previous error.

TABLE 41-N

RECAPITULATION
PROJECT LEVEE TABLES 42-K, -L, AND -M
(FISCAL YEAR 2001)

Location	Levees and Floodwalls (Miles)					Berm[5] (Miles)				Surfaced Roads on Levees (Miles)			
		Built to Approved Grade and Section											
	Authorized for System	Total in Place This FY	This FY	Total Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Complete Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Total Complete Thru This FY	Currently Under Construction
MAIN STEM LEVEES													
Mississippi River													
New Orleans District, Table 41-K	511.6	511.6	3.8	494.9[4]	--	1.2	--	1.1	--	479.6	--	479.6	--
Vicksburg District, Table 41-L	460.4	460.4	7.7	258.3	22.9	309.2	--	264.2	--	450.1	--	450.1	--
Memphis District, Table 41-M	637.8	631.0	--	607.5	--	342.7	--	272.6	--	605.6	--	596.6	--
Total Mississippi River	1,609.8	1,603.0	11.5	1,360.7	22.9	653.1	--	537.9	--	1,535.3	--	1,526.3	--
Other Levees Included in Main Stem													
Atchafalaya Basin Floodway–NOD	449.2	449.2	0.9	388.4	--	--	--	--	--	447.5	--	428.2	--
Louisiana State Pen Levee--NOD	12.1	12.1	7.3	7.3	4.8	--	--	--	--	--	--	--	--
Lower Red River-South Bank–VXD	59.2	59.2	--	59.2	--	--	--	--	--	59.2	--	59.2	--
Arkansas River-South Bank–VXD	85.4	85.4	--	85.4	--	24.7	--	24.7	--	84.1	--	81.1	--
Total Other Levees Included in Main Stem	605.9	605.9	8.2	540.3	4.8	24.7	--	24.7	--	590.8	--	568.5	--
Total Main Stem Levees	2,215.7	2,208.9	19.7	1,901.0	27.7	677.8	--	562.6	--	2,126.1	--	2,094.8	--
TRIBUTARY LEVEES IN MR&T PROJECT													
Lake Pontchartrain, LA,--NOD	17.4	17.4	--	17.4	--	--	--	--	--	17.4	--	17.4	--
Yazoo River Basin—VXD	624.1	425.3	--	237.6	--	--	--	--	--	624.1	--	338.9	--
Arkansas River-North Bank--VXD	61.5	56.2	--	56.2	--	8.3	--	8.3	--	47.4	--	47.4	--
Red River Backwater—VXD	263.6	237.3	--	219.7	12.9	--	--	--	--	249.0	--	219.7	12.9
St. Francis River—MD	308.2	302.9	--	302.9	--	--	--	--	--	301.0	--	133.5	--

TABLE 41-N
(Continued)

RECAPITULATION
PROJECT LEVEE TABLES 42-K, -L, AND -M
(FISCAL YEAR 2001)

Location	Levees and Floodwalls (Miles)					Berm[5] (Miles)				Surfaced Roads on Levees (Miles)			
		Built to Approved Grade and Section											
	Authorized for System	Total in Place This FY	This FY	Total Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Complete Thru This FY	Currently Under Construction	In System When Completed	Built This FY	Total Complete Thru This FY	Currently Under Construction
Little River--MD	130.1	130.1	--	130.1	--	--	--	--	--	128.9	--	94.5	--
Lower White River—MD	95.6	85.9	--	84.1	--	--	--	--	--	94.0	--	81.0	--
Memphis Harbor–MD	10.5	10.5	--	10.5	--	7.0	--	7.0	--	10.5	--	10.5	--
Total Tributary Levees in MR&T Project	1,511.0	1,265.6	--	1,058.5	12.9	15.3	--	15.3	--	1,472.3	--	942.9	12.9
Grand Total in Project	3,726.7	3,474.5	19.7	2,959.5	40.6	691.2	--	577.9	--	3,598.4	--	3,037.7	12.9

1. Landside seepage berms only.
2. Subject to change as planning progresses.
3. 1996 Revised Project Design Flood flowline identified freeboard deficiences.
4. Changed to correct previous error.
5. Relief wells have been used in lieu of seepage berms in some reaches of the Miss. River Levees.

TABLE 41-O CHANNEL IMPROVEMENTS: NEW ORLEANS DISTRICT FISCAL YEAR 2001)

Location	Year Initiated	In System When Completed	Built This FY (Miles)	Total Complete Thru This FY	Percent Complete	Currently Under Construction
Bayou des Glaises diversion channel	1938	6.0	--	6.0	100	--
Bayous Rapides, Boeuf, and Cocodrie	1946	92.6	--	63.4	75	--
Charenton drainage and navigation canal	1939	6.3	--	6.3	100	--
Wax Lake Outlet	1938	15.7	--	15.7	100	--
Atchafalaya Basin Floodway	1933	244.2	--	186.4	76	--
Morganza Floodway	1941	3.3	--	3.3	100	--
Old River outflow channel	1956	8.3	--	8.3	100	--
Old River inflow channel	1960	2.3	--	2.3	100	--
Old River lock approach channels	1961	2.2	--	2.2	100	--
Baton Rouge Harbor (Devils Swamp)	1958	2.5	--	2.5	100	--
Teche-Vermilion Water Supply	1977	6.3	--	6.3	100	--
Old River Auxiliary Control Structure inflow channel	1986	1.9	--	1.9	100	--
Old River Auxiliary Control Structure outflow channel	1988	0.9	--	0.9	100	--
Caernarvon Freshwater Diversion channel	1988	1.7	--	1.7	100	--

TABLE 41-P CHANNEL IMPROVEMENTS: VICKSBURG DISTRICT (FISCAL YEAR 2001)

Location	Year Initiated	In System When Completed	Total Complete Built This FY (Miles)	Thru This FY	Percent Complete	Currently Under Construction
BIG SUNFLOWER RIVER, ETC., MS						
Big Sunflower River	1947	199.1	--	199.1	100	--
Quiver River	1947	69.6	--	69.6	100	--
Deer Creek	1947	7.0	--	7.0	100	--
Steele Bayou	1947	54.9	--	54.9	100	--
Steele Bayou[1]	1965	71.2	--	71.2	100	--
Main Canal	1959	21.1	--	21.1	100	--
Main Canal[2]	1993	26.7	--	26.7	100	--
Black Bayou	1992	36.5	6.2	26.3	72	10.2
Big Sunflower River tributaries	1957	227.2	--	227.2	100	--
Quiver River tributaries	1960	35.4	--	35.4	100	--
YAZOO BACKWATER						
Yazoo Backwater	1960	39.9	--	39.9	100	--
YAZOO BASIN HEADWATER, MS						
Upper Yazoo Project	1976	179.0	3.6	76.2	43	4.3
Coldwater River	1941	54.6	--	54.6	100	--
Arkabutla Canal	1948	0.4	--	0.4	100	--
Tallahatchie Canal	1940	74.8	--	73.5	98	--
Little Tallahatchie River and Panola-Quitman Floodway	1939	48.0	--	48.0	100	--
Greenwood protection works	1971	2.9	--	2.9	100	--
Yacona River	1952	1.8	--	1.8	100	--
Bobo Bayou	1944	16.1	--	16.1	100	--
Cassidy Bayou	1934	69.0	--	69.0	100	--
Cassidy Bayou[3]	--	26.0	--	--	--	--
Bear Creek Diversion	--	4.8	--	--	--	--
Lake Cormorant	--	20.9	--	--	--	--
Hurricane Bayou	--	2.5	--	--	--	--
Opossum Bayou	--	20.8	--	--	--	--
Abaica Creek	--	7.7	--	--	--	--
Chicopa Creek	--	7.0	--	--	--	--
Bear Creek	--	23.3	--	--	--	--
Rocky Bayou	--	7.8	--	--	--	--
Whiteoak Bayou	--	55.9	--	--	--	--
Miscellaneous ditches	--	12.3	--	--	--	--
Yalobusha River	1939	46.0	--	46.0	100	--
Yazoo River	1940	160.2	--	160.2	100	--
Whittington Auxiliary Channel	1956	30.8	--	30.8	100	--
Tchula Lake	1964	26.4	--	26.4	100	--
David-Burrell Bayou	1957	40.4	--	40.4	100	--
McKinney Bayou	1960	3.5	--	3.5	100	--

TABLE 41-P (Continued)

CHANNEL IMPROVEMENTS: VICKSBURG DISTRICT FISCAL YEAR 2001)

Location	Year Initiated	In System When Completed	Total Complete Built This FY (Miles)	Thru This FY	Percent Complete	Currently Under Construction
YAZOO BASIN HEADWATER, MS (Continued)						
Hillside Floodway	1964	11.0	--	11.0	100	--
Yazoo City protection works	1953	1.6	--	1.6	100	--
Ascalmore-Tippo Bayous	1975	30.2	--	15.1	50	--
Alligator-Catfish Bayou	1973	8.3	0.1	8.3	100	--
Pelucia Creek	1975	11.7	.2	11.7	100	--
BOEUF & TENSAS RIVERS, ETC., LA AND AR						
Bayou Lafourche	1949	45.3	--	45.3	100	--
Bayou Lafourche[4,7]	1972	43.0	--	4.4	10	--
Big & Colewa Creeks	1947	81.4	--	81.4	100	--
Big & Colewa Creeks[5,7]	1965	86.8	--	51.5	60	--
Tensas River	1947	96.5	--	96.5	100	--
Tensas River[6]	1968	165.0	--	61.0	37	--
Boeuf River, AR and LA	1953	103.9	--	103.9	100	--
Fleschmans Bayou, AR	1963	6.6	--	6.6	100	--
Caney Bayou, AR	1964	7.4	--	7.4	100	--
Canal 18, AR	1963	10.3	--	10.3	100	--
Big Bayou, AR	1952	33.3	--	33.3	100	--
Black Pond Slough, AR	1962	14.3	--	14.3	100	--
Bayou Macon, AR and LA	1959	150.8	--	150.8	100	--
Rush Bayou, AR	1964	6.7	--	6.7	100	--
Canal 19, AR	1957	50.2	--	50.2	100	--
Canal 43, AR	1956	34.5	--	34.5	100	--
Canal 81, AR	1957	32.7	--	32.7	100	--
Mill Bayou-Bayou Vidal-Bayou Vidal Cutoff	--	17.1	--	--	--	--
Kirsch Lake Canal	--	9.3	--	--	--	--
Canal 19 Extension	1964	9.4	--	9.4	100	--
Lake Chicot Pumping Plant	--	2.5	--	2.5	100	--
Mill Bayou	1955	4.8	--	4.8	100	--
RED RIVER BACKWATER, LA						
Tensas-Cocodrie Pumping Plant	1976	6.9	--	6.9	100	--
Six Mile Bayou, LA	--	1.5	--	1.5	100	--

1. Includes further work on 54.9 miles and adds 16.3 miles of channel to the project.
2. Includes further work on 21.1 miles and adds 1.1 miles of channel to the project.
3. Includes further work on 26.0 miles.
4. Includes further work on 38.6 miles and adds 4.4 miles of channel to the project.
5. Includes further work on 75.3 miles and adds 11.5 miles of channel to the project.
6. Includes further work on 96.5 miles and adds 68.5 additional miles of channel to the project.
7. Further work on these items has been deferred due to local oppositions and withdrawal of sponsorship by the levee district.

TABLE 41-Q CHANNEL IMPROVEMENTS: MEMPHIS DISTRICT (FISCAL YEAR 2001)

Location	Year Initiated	In System When Completed	Total Complete Built This FY (Miles)	Thru This FY	Percent Complete	Currently Under Construction
BIRDS POINT-NEW MADRID FLOODWAY						
Birds Point-New Madrid Intercepting Ditch Enlargement, Samos and Vicinity, MO	1952	9.6	--	9.6	100	--
ST. FRANCIS BASIN						
Little River Drainage, MO	1963	298.9	--	298.9	100	--
St. Francis River, MO and AR	1953	638.5	--	573.8	90	6.6
West Memphis Drainage, AR	1951	19.8	--	19.8	100	--
Big Slough and Mayo Ditch, AR	1960	28.0	--	28.0	100	--
Tyronza River, AR	1939	12.7	--	12.7	100	--
L'Anguille River, AR	(1)	95.0	--	--	--	--
LOWER WHITE RIVER BASIN, AR						
Cache River Basin, AR	1972	231.5	--	7.2	3	--
Big Creek and tributaries, AR	(1)	103.8	--	--	--	--
WEST KENTUCKY TRIBUTARIES						
Obion Creek, KY	(1)	41.7	--	--	--	--
WEST TENNESSEE TRIBUTARIES						
MS River, Western TN tributaries (Backwater Areas) (1946 Act)	1952	34.3	--	34.3	100	--
Obion River Diversion Channel, TN (1946 Act)	(1)	9.3	--	--	--	--
Reelfoot Lake-Lake No. 9, KY and TN	1974	15.8	--	3.0	19	--
Running Reelfoot Bayou, TN	1955	19.7	--	19.7	100	--
MS River Below Cape Girardeau: West TN tributaries (1948 Act)	1961	225.0	3.2	93.0	41	--
Wolf River and tributaries, TN	1960	24.7	--	24.7	100	--
NONCONNAH CREEK, MS AND TN						
Nonconnah Creek, MS and TN	1990	18.2	1.26	1.26	1	--
HELENA HARBOR, PHILLIPS COUNTY, AR						
Helena Harbor, AR(2)	1989	2.25	--	2.25	100	--

1. Not started.
2. Data for Stage 1 only.

TABLE 41-R

PUMPING STATIONS: NEW ORLEANS DISTRICT (FISCAL YEAR 2001)

Name	Authorized Size (CFS)	Percent Complete Thru This FY	Year Complete (Schedule/ Actual)	Rehabilitation Status (If Applicable) Year Initiated	Percent Complete Thru This FY	Year Complete (Schedule/ Actual)
Bayou Yokely	489	100	1955	1990	100	1991(A)
Bayou Yokely Enlargement	568	100	1963	1990	100	1991(A)
Centerville	332	100	1964	1991	100	1992(A)
Ellerslie	136	100	1953	--	--	--
Franklin	144	100	1958	1992	100	1993(A)
Franklin Enlargement	144	100	1978	1992	100	1993(A)
Gordy	238	100	1964	--	--	--
Maryland	136	100	1957	1991	100	1992(A)
North Bend	52	100	1962	--	--	--
Tiger Island	75	100	1955	--	--	--
Wax Lake East	1,008	100	1961	1990	100	1992(A)
Wax Lake West	496	100	1965	1990	100	1992(A)
Teche Vermilion	1,300	100	1982	--	--	--
Pointe Coupee	1,500	100	1983	--	--	--
David Pond	570	100	2000	1997	--	--
TOTAL	6,618					

TABLE 41-S

PUMPING STATIONS: VICKSBURG DISTRICT (FISCAL YEAR 2001)

Name	Authorized Size (CFS)	Percent Complete Thru This FY	Year Complete (Schedule/ Actual)	Rehabilitation Status (If Applicable) Year Initiated	Percent Complete Thru This FY	Year Complete (Schedule/ Actual)
Chauvin Bayou, LA	250	100	1994	1991	100	
Bawcomville	270	100	1955	1992	100	1993
Jonesville	180	100	1952	--	--	--
Natchez Port	100	--	--	--	--	--
Wilson Point	50	--	--	--	--	--
Greenwood - Lee Street	90	100	1953	1952	--	--
Greenwood - Wilson Street	67	100	1953	1952	--	--
Greenwood - Walker Lake	675	100	1949	1952	--	--
Yazoo City	540	100	1954	1957	--	--
Columbia	45	100	1939	--	--	--
Calion	200	100	1959	--	--	--
McKinney Bayou, MS	250	100	1962	1961	--	--
Lake Chicot	6,500	100	1987	--	--	--
Tensas Cocodrie	4,000	100	1986	--	--	--
Yazoo Backwater	10,000	--	--	--	--	--
Natchez Area	300	--	--	--	--	--
Bushley Bayou	300	--	Indef[1]	--	--	--
Bushley Bayou	20	--	Indef[1]	--	--	--
Sicily-HAHA Bayou	750	100	2000	--	--	--
Sicily - Fool River	300	100	2000	--	--	--
Pelucia Creek - Rising Sun #1	10	100	1992	--	--	--
Pelucia Creek - Rising Sun #2	15	100	1992	--	--	--
Pelucia Creek Pump	75	100	1993	--	--	--
Below Red River	500	--	Indef[1]	--	--	--
Bayou Rapides	222	100	1936	--	--	--
Ouachita Parish, River Styx Bayou, LA	500	100	2000	--	--	--
Total	25,709					

[1] This project has been placed in the inactive category.

TABLE 41-T

PUMPING STATIONS: MEMPHIS DISTRICT (FISCAL YEAR 2001)

Name	Authorized Size (CFS)	Percent Complete Thru This FY	Year Complete (Schedule/ Actual)	Rehabilitation Status (If Applicable) Year Initiated	Percent Complete Thru This FY	Year Complete (Schedule/ Actual)
Devall's Bluff	215	100	1949	1987	100	1989
Des Arc, Ark.	30	100	1954	--	--	--
Ensley	900	100	1966	--	--	--
DD #17, Station #1	375	100	[1]	--	--	--
Huxtable Pumping Plant	12,000	100	1977	--	--	--
Graham Burke	1,500	100	1964	--	--	--
Finley Street	100	100	1978	--	--	--
Dyersburg	26	100	1961	--	--	--
Cotton Slough	50	100	1964	--	--	--
West Hickman	190	100	1976	--	--	--
Cypress Creek	3,000	100	1944	--	--	--
Fairfax	53.5	100	1950	--	--	--
Goose Pond	110	100	1976	--	--	--
Marble Bayou	220	100	1952	--	--	--
Workhouse Bayou	520	100	1950	--	--	--
Nonconnah	1,620	100	1944	--	--	--
L&DD #3 Peafield	400	100	[1]	--	--	--
Treasure Island	150	100	1976	--	--	--
Lake No. 9	500	100	1981	--	--	--
Cairo 10th Street	65	100	1981	--	--	--
Cairo 28th Street	65	100	1981	--	--	--
DD #17, Station #2	700	100	1981	--	--	--
Drinkwater Sewer	150	100	1979	--	--	--
May Street	5	100	1948	--	--	--
Cairo 22nd Street	37	100	[1]	--	--	--
Gayoso Bayou	1,500	100	1915	--	--	--
Mud Lake	200	--	--	--	--	--
Madison	25	--	--	--	--	--
Cache River	200	--	--	--	--	--
New Madrid	1,500	--	--	--	--	--
St. John's Bayou	1,000	--	--	--	--	--
Drinkwater #2	150	100	2001	--	--	--
TOTAL	27,556.5					

[1] Unknown constructed by local interest.

TABLE 41-U COSTS DURING FISCAL YEAR 2001

Item	Construction	Maintenance	Other
FEDERAL FUNDS			
Flood control, Mississippi River and tributaries:			
St. Louis District:			
St. Francis Basin-Wappapello Lake	$ --	$ 7,281,187	$ 467
Subtotal		7,281,187	467
Memphis District:			
Cache Basin, AR	5,848	--	--
Channel improvement	16,959,470	27,630,195	--
Eastern Arkansas Region (Comp)	20,871,117	--	--
Francis Blank Floodway Ditch (Eight Mile)	163,725	--	--
General investigations	--	--	5,790,316
Helena & Vicinity	103,565	--	--
Helena Harbor, Phillips County	-618,002	284,170	--
Hickman Bluff, KY	147,480	--	--
Horn Lake Creek & Tribs	4,224	--	--
Inspection of completed works	--	723,049	--
L'Anguille River, AR	10,447	--	--
Mapping	--	347,823	--
Memphis Harbor (McKeller Lake)	--	1,858,065	--
Nonconnah Creek, TN & MS	1,714,405	--	--
Nonconnah Creek, Flood Control Extension	17,380	--	--
Mississippi River levees	7,839,980	4,269,690	--
St. Francis River & Tributaries, AR	5,852,321	10,054,386	--
St. Johns Bayou & New Madrid	168,226	--	--
West Tennessee tributaries	233,307	--	--
White River Backwater	--	2,611,266	--
Whiteman's Creek, AR	16,075	--	--
Subtotal	53,509,822	47,778,645	5,790,316
Vicksburg District:			
Channel improvement	16,647,862	18,016,022	--
General investigations	--	--	1,313,715
Inspection of completed works	--	301,169	--
Lower Arkansas – South Bank	--	8,930	--
Lower Arkansas River – North Bank, AR		123,306	--
Lower Red River--South Bank Red River Levee	--	2,902,127	--
Mapping	--	376,200	--
Mississippi River levees	23,235,072	3,107,030	--
Tensas Basin	6,107,736	4,126,282	--
Yazoo Basin	32,698,075	33,377,245	--
Subtotal	78,688,746	62,338,312	1,313,715

TABLE 41-U (Continued) COSTS DURING FISCAL YEAR 2001

Item	Construction	Maintenance	Other
New Orleans District:			
Atchafalaya Basin	23,370,362	12,322,925	--
Atchafalaya Basin Floodway System	9,723,656	1,232,077	--
B. R. Harbor Devil Swamp	--	320,193	--
Bayou Cocodrie and Tributaries	--	55,258	--
Bonnet Carre Spillway	--	1,183,770	--
Channel Improvement	10,667,166	15,286,662	--
General Investigations	--	--	1,711,493
Inspection of Completed Works	--	259,987	--
Louisiana Penitentiary Levee	2,440,539		
Mapping	--	339,315	--
Mississippi & LA Estuarine	110,007	--	--
Mississippi Delta Region	8,960,551	629,544	--
Mississippi River Levees	3,855,161	1,466,033	--
Old River	--	4,547,237	--
Subtotal	59,127,442	37,643,001	1,711,493
Total Federal Funds	191,326,010	155,041,146	8,815,991
CONTRIBUTED FUNDS			
Memphis District			
Helena-West Helena – Phillips County		653,202	
Reelfoot Lake TN & KY	--	--	160,770
Whiteman's Creek, AR (Flood Control)		200	
Wolf River	--	--	1,022
New Orleans District:			
Highway 70, Lake Palourde, LA	--	637,750	--
Louisiana Penitentiary Levee	--	1,294,319	--
Old River	--	100,628	--
Mississippi Delta Region	3,392,875	3,392,875	--
Morganza, LA to Gulf of Mexico	--	--	430,676
Total Contributed Funds	3,392,875	2,686,100	1,280,882
Grand Total, Federal and Contributed Funds	194,718,885	157,727,245	10,096,873

TABLE 41-V STATEMENT OF ALLOTMENTS AND ACCRUED EXPENDITURES FOR FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES, FROM MAY 15, 1928, THROUGH SEP. 30, 2001

District or Installation and Class of Work	Allotments	Accrued Expenditures	Unexpended Balance Sep. 30, 2001
ALLOTMENTS AND ACCRUED EXPENDITURES CHARGEABLE AGAINST FLOOD CONTROL ACT LIMITATIONS:			
COMPLETED WORKS:			
Waterways Experiment Station	$ 874,000	$ 874,000	$ --
Office, Chief of Engineers	19,158	19,158	--
Rock Island District:			
S. G. & O. prior to Aug. 18, 1941	14,010	14,010	--
St. Louis District:			
S. G. & O. prior to Aug. 18, 1941	169,352	169,352	--
Subtotal	1,076,520	1,076,520	--
Memphis District:			
Des Arc, AR	178,925	178,925	--
Contraction works	8,692,791	8,692,791	--
DeValls Bluff, AR	231,215	231,215	--
Mapping	1,450,337	1,450,337	--
Memphis Harbor	18,736,432	18,736,432	--
New Madrid Floodway	6,521,543	6,521,543	--
Wolf River and tributaries	1,723,620	1,723,620	--
Roads on levees (Mississippi River levees)	12,426	12,426	--
S. G. & O. prior to Aug. 18, 1941	1,998,766	1,998,766	--
Subtotal	39,546,054	39,546,054	--
Vicksburg District:			
Boeuf Basin levees	2,764,605	2,764,605	--
Channel realignment, Arkansas River	125,074	125,074	--
Contraction works	1,972,183	1,972,183	--
Eudora Floodway	826,235	826,235	--
Vicksburg Harbor	4,664,515	4,664,515	--
Greenville Harbor	2,864,516	2,864,516	--
Grants Canal (Mississippi River levees)	7,070	7,070	--
Mapping	1,531,021	1,531,021	--
Jonesville, LA	172,950	172,950	--
Tensas National Wildlife Refuge, LA	3,980,000	3,980,000	--
Roads on levees	105,660	105,660	--
S. G. & O. prior to Aug. 18, 1941	2,350,201	2,350,201	--
Subtotal	57,184,031	57,184,031	--

TABLE 41-V (Continued)

STATEMENT OF ALLOTMENTS AND ACCRUED EXPENDITURES FOR FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES, FROM MAY 15, 1928, THROUGH SEP. 30, 2001

District or Installation and Class of Work	Allotments	Accrued Expenditures	Unexpended Balance Sep. 30, 2001
New Orleans District:			
Baton Rouge Harbor, LA	699,185	--	--
Atchafalaya River and Basin, LA	3,375,492	--	--
Bonnet Carre? Spillway, LA	14,212,198	14,212,198	--
Contraction works	1,258,916	1,258,916	--
Mapping	1,112,967	--	--
Roads on levees	540,838	540,838	--
S. G. & O. prior to Aug. 18, 1941	2,701,566	2,701,566	--
Wax Lake Outlet and Charenton Canal	10,098,817	10,098,817	--
Morganza Floodway and structure	35,992,117	35,992,117	--
Lake Pontchartrain	5,513,110	5,513,110	--
Teche Vermilion Basin Water Supply	34,506,000	34,506,000	--
Old River	292,274,000	292,274,000	--
Atchafalaya Basin, rights-of-way and flowage, Bayou des Glaises setback	387,917	387,917	--
Subtotal	402,673,123	402,673,123	--
All other completed items:			
Surveys under Sec. 10, Flood Control Act of 1928	4,995,215	4,995,215	--
Impounded savings	1,593,097	1,593,097	--
Plant transferred to revolving fund	24,924,578	24,924,578	--
OCE (portion of allotment transferred to revolving fund, Washington Dist.)	19,882	19,882	--
Subtotal	31,532,772	31,532,772	--
TOTAL COMPLETED WORKS	532,012,500	532,012,500	--
UNCOMPLETED WORKS:			
Rock Island District:			
Levees under Sec. 6, Flood Control Act of 1928	579,462	579,462	--
St. Louis District:			
Levees under Sec. 6, Flood Control Act of 1928	1,897,980	1,897,980	--
Subtotal	2,477,442	2,477,442	--
Memphis District:			
Mississippi River levees			
Mississippi River levees	242,183,601	241,199,730	983,871
New Madrid	98,000	98,000	--
Channel improvement:			
Revetments	458,442,006	458,307,137	134,872
Dredging	58,566,439	58,566,439	--
Dikes	251,906,942	251,629,666	277,276

TABLE 41-V (Continued) STATEMENT OF ALLOTMENTS AND ACCRUED EXPENDITURES FOR FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES, FROM MAY 15, 1928, THROUGH SEP. 30, 2001

District or Installation and Class of Work	Allotments	Accrued Expenditures	Unexpended Balance Sep. 30, 2001
Memphis District: (Continued)			
Reelfoot Lake	439,434	439,434	--
Reelfoot Lake, Lake No. 9, TN-KY	7,896,000	7,896,000	--
St. Francis Basin:			
Wappapello Lake	9,019,908	9,019,908	--
St. Francis River and tributaries	312,313,412	311,943,274	370,138
Big Slough and Mayo ditch	965,429	965,429	--
Little River drainage	52,486,092	52,485,397	695
Lower White River:			
Clarendon Levee	652,115	652,115	--
Augusta to Clarendon, AR	1,788,846	1,788,846	--
White River backwater levee, AR	10,624,501	10,624,501	--
Horn Lake Creek & Tribs	2,190,300	2,180,603	9,697
Horn Lake Creek Modificiation, MS	35,000	26,102	8.898
Hickman Bluff, KY	17,509,600	17,228,448	281,152
Memphis Harbor Ensley Berm	3,510,000	3,510,000	--
Nonconnah Creek, Flood Control Ext.	30,000	17,380	12,620
Nonconnah Creek Recreation Facility	10,910	10,900	10
Nonconnah Creek Environmental Enhancement	11,510	11,502	8
Nonconnah Creek, TN & MS	12,812,399	12,807,409	4,990
West Memphis and Vicinity	571,000	571,000	--
Whiteman's Creek, Ar	1,897,500	1,875,010	2,490
Levees under Sec. 6, Flood Control Act of 1928	108,651	108,651	--
West Tennessee Tributaries	54,184,255	54,182,874	1,381
Helena Harbor	15,131,000	15,091,679	39,321
Helena & Vicinity, AR	2,674,478	2,660,638	13,840
Cache Basin, AR	10,850,000	10,849,291	709
West Kentucky Tributaries	1,440,000	1,440,000	0
Mud Lake Pumping Station, TN	100,000	100,000	0
L'Anguille River	237,432	236,840	592
Eight Mile Creek	3,895,161	3,895,161	0
St. Johns Bayou & New Madrid Floodway	4,933,847	4,917,677	16,170
Eastern Arkansas Reg (Comp)	7,923,800	7,895,346	28,454
St. Francis Bland Floodway Ditch (Eight Mile Creek)	340,828	334,397	6,431
Subtotal	1,567,968,757	1,565,754,561	2,214,196
Vicksburg District:			
Mississippi River Levees (excludes Grants Canal, $7,070, shown under completed works)	318,430,475	317,909,957	520,518
Section 6 Levees	9,000	9,000	--
Lower Arkansas River:			
North Bank	7,049,414	7,049,414	--
South Bank	15,676,286	15,676,286	--
Tensas Basin:			
Lake Chicot Pumping Plant	95,639,986	95,639,945	41
Tensas River	41,505,235	41,505,235	--
Red River Backwater:			
Below Red River	639,400	639,400	--

TABLE 41-V (Continued)

STATEMENT OF ALLOTMENTS AND ACCRUED EXPENDITURES FOR FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES, FROM MAY 15, 1928, THROUGH SEP. 30, 2001

District or Installation and Class of Work	Allotments	Accrued Expenditures	Unexpended Balance Sep. 30, 2001
Red River Backwater Levee, LA	133,197,254	132,936,609	260,645
Tensas Cocodrie Pumping Plant	56,071,200	56,071,167	33
Lower Red River South Bank Red River Levees	756,300	756,300	--
Channel improvement:			
Revetments	536,940,704	536,856,937	83,768
Dredging	23,919,516	23,919,516	--
Dikes	183,579,175	183,463,425	115,750
Levees under Sec. 6, Flood Control Act of 1928	958,175	958,175	--
Ouachita River Levees	400,000	400,000	--
Yazoo Basin:			
Sardis Lake	26,502,400	26,502,400	--
Enid Lake	21,292,400	21,292,400	--
Arkabutla Lake	16,000,700	16,000,700	--
Grenada Lake	45,401,494	45,401,494	--
Greenwood	11,543,000	11,543,000	--
Belzoni	316,656	316,656	--
Yazoo City	2,205,611	2,205,611	--
Will M. Whittington auxiliary channel	10,950,966	10,950,966	--
Big Sunflower, etc.	96,750,992	96,410,165	340,827
Main Stem	34,629,249	34,629,163	86
Upper Yazoo Projects	164,268,058	164,893,429	374,629
Yazoo Basin--Tributaries			
Tributaries (Except Ascal-Tippo-Opossum Bayous)	107,149,582	107,146,193	3,389
Tributaries--Bank Stabilization	612,484	612,484	--
Ascalmore-Tippo-Opossum Bayous	23,977,200	23,977,200	--
Yazoo Basin Backwater			
Yazoo Backwater	59,982,435	56,970,030	12,405
Rocky Bayou	3,401,500	3,401,500	--
Yazoo Backwater Pumping Plant	11,786,485	11,742,500	43,985
Yazoo Backwater, F&WL Mitigation	6,391,500	6,391,497	3
Yazoo Basin Reformulation	29,037,143	28,662,409	374,734
Streambank Erosion Control, Eval. and Demo.	14,767,000	14,767,000	--
Demonstration Erosion Control	275,290,741	274,149,562	1,141,179
Dam Safety Assurances-Sardis Dam	23,235,000	23,230,763	4,237
Subtotal	2,401,787,257	2,398,511,029	3,276,228
New Orleans District:			
Bayou Cocodrie and Tributaries	5,008,008	5,008,008	--
Miss. & LA Estuarine	4,617,391	4,613,095	4,296
Channel Improvement:			
Dredging	35,945,266	35,945,266	--
Revetments	1,061,088,793	1,061.027,783	61,010
Louisiana Penitentiary Levee	13,054,502	12,877,340	177,162
Lower Red River (South Bank Levees)	18,056,600	18,056,600	--

TABLE 41-V (Continued) STATEMENT OF ALLOTMENTS AND ACCRUED EXPENDITURES FOR FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES, FROM MAY 15, 1928, THROUGH SEP. 30, 2001

District or Installation and Class of Work	Allotments	Accrued Expenditures	Unexpended Balance Sep. 30, 2001
New Orleans District (Continued):			
Levees Under Sec. 6, Flood Control Act of 1928	200,680	200,680	--
Mississippi River Levees	371,493,524	370,676,915	816,609
Mississippi Delta Region	91,876,467	91,725,007	151,460
Atchafalaya Basin Floodway:			
Atchafalaya Basin	892,010,961	891,478,873	532,088
Atchafalaya River Navigation	303,463	303,463	--
Atchafalaya Basin Floodway System	89,818,314	89,510,804	307,510
Subtotal	2,583,473,969	2,581,423,835	2,050,135
TOTAL UNCOMPLETED WORKS	6,555,707,427	6,548,166,867	7,540,559
ADVANCE ENGINEERING AND DESIGN (CONSTRUCTION)			
Memphis District:			
L'Anguille River Basin, AR	150,000	150,000	--
Reelfoot Lake, Lake No. 9	30,000	30,000	--
Cache River	420,000	420,000	--
Big Creek and Tributaries, Lower White River	365,000	365,000	--
Clarendon Levee, Lower White River	65,000	65,000	--
West Kentucky Tributaries	175,000	175,000	--
Mud Lake Pumping Station, TN	350,000	350,000	--
Harris Fork Creek, KY & TN	540,000	540,000	--
Subtotal	2,095,000	2,095,000	--
Vicksburg District:			
Yazoo Basin, Big Sunflower River, Steele Bayou	29,700	29,700	--
Tensas - National Wildlife Refuge, LA	200,000	200,000	--
Subtotal	229,700	229,700	--
New Orleans District:			
Mississippi Delta Region (EP 309)	69,753	69,753	--
Teche Vermilion Basin-Water Supply	1,109,000	1,109,000	--
East Rapides & S. Central Avoyelles Parishes	965,247	965,247	--
Subtotal	2,144,000	2,144,000	--
TOTAL ADVANCE ENGINEERING AND DESIGN	4,468,700	4,468,700	--
TOTAL COMPLETED WORKS, UNCOMPLETED WORKS AND ADVANCE ENGINEERING AND DESIGN	7,092,188,627	7,084,648,067	7,540,560

TABLE 41-V (Continued) STATEMENT OF ALLOTMENTS AND ACCRUED EXPENDITURES FOR FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES, FROM MAY 15, 1928, THROUGH SEP. 30, 2001

District or Installation and Class of Work	Allotments	Accrued Expenditures	Unexpended Balance Sep. 30, 2001
RECREATION FACILITIES--COMPLETED PROJECTS			
Eight-Year Project Funds			
St. Louis District:			
Wappapello Lake, MO	2,405,300	2,405,300	--
Wappapello Lake, MO, Rockwood Landing	203,286	203,286	--
Subtotal	2,608,586	2,608,586	--
Vicksburg District:			
Sardis Lake	1,584,339	1,584,339	--
Enid Lake	2,268,209	2,268,209	--
Arkabutla Lake	2,189,280	2,189,280	--
Grenada Lake	1,631,281	1,631,281	--
Subtotal	7,673,109	7,673,109	--
Total Eight-Year Program Funds	10,281,695	10,281,695	--
Total chargeable against Flood Control Act Limitations excluding flood control emergencies	7,102,470,322	7,094,929,762	7,540,560
Total maintenance since Jul. 18, 1941	3,529,354,666	3,526,707,227	2,647,439
Total rehabilitation	31,113,000	31,113,000	--
Total flood control emergencies	14,900,300	14,900,300	--
Total general investigations	134,089,940	132,636,741	1,453,199
Total flood control, MR&T appropriations	10,811,928,228	10,800,287,030	11,641,198
Appropriations in addition to flood control, MR&T Other appropriations itemized in footnote (1), pp. 2068-69, Annual Report for 1953	32,068,909	32,068,909	--
Grand total appropriated to Sep. 30, 2001	10,843,997,137	10,832,355,939	11,641,198

Note: Preauthorization study costs chargeable to the MR&T authorization have been transferred to completed work. Costs not chargeable have been excluded from this report.

TABLE 41-W COST AND FINANCIAL STATEMENT

Project	Funding	FY 98	FY 99	FY 00	FY 01	Total Sep. 30, 2001
Mississippi River and tributaries (Regular Funds)[1]	General investigations:					
	Allotted	5,382,000	4,555,533	4,298,200	9,326,826	134,089,940
	Cost	5,272,270	5,075,113	4,343,534	8,815,991	132,636,742
	Construction (includes advance engineering and design):					
	Allotted	160,418,300	175,048,000	180,682,819	193,639,344	6,922,287,425
	Cost	170,984,427	186,439,799	181,928,513	191,326,010	6,914,746,867
	Maintenance					
	Allotted	130,411,700	144,033,008	124,434,981	156,492,122	3,529,354,666
	Cost	132,269,594	146,145,781	123,983,756	155,041,146	3,526,707,207
	Rehabilitations					
	Allotted	--	--	--	--	31,113,000
	Cost	--	--	--	--	31,113,000
	Flood control emergencies (Maintenance):					
	Allotted	--	--	--	--	14,885,992
	Cost	--	--	--	--	14,885,992
(Contributed Funds)	New Work:					
	Contributed	5,189,334	--	--	--	34,339,413
	Cost	6,142,217	--	--		33,270,005
	Maintenance					
	Contributed	186,720	2,724,600	6,127,991	1,977,852	14,213,354
	Cost	382,013	1,545,379	7,675,222	2,022,470	14,543,555

1. Appropriations were as follows:

Appropriations chargeable against Flood Control Act authorizations:		
Flood Control, MR&T except for emergencies (excludes Maintenance allotments Aug. 18, 1941, through Sep. 30, 2001):		
Net total allotted for works under Mississippi River Commission:	$7,091,768,853	
Eight-Year Program Funds, Construction General:	10,281,695	
Surveys under Sec. 10, Flood Control Act of 1928 (not under MRC):	4,995,215	
Transferred to revolving fund:	24,944,460	
Impounded savings:	1,593,097	$7,133,583,320
Flood control emergencies:		
Net total allotted:	14,885,922	
Impounded savings:	14,378	14,900,300
Additional funds not chargeable against Flood Control Act authorizations:		
Appropriations for Flood Control, MR&T, except for flood control emergencies:		
General investigations:	134,089,940	
Maintenance allotments Aug. 18, 1941, through Sep. 30, 2001	3,529,354,666	3,663,444,606
Appropriations in addition to appropriations for Flood Control, MR&T (itemized in footnote (1), pp. 2068-69, Annual Report for 1953):	32,068,909	
Budgetary and OCE Reserves:		
Grand total:		10,843,997,135

TABLE 41-W (Continued) COST AND FINANCIAL STATEMENT

Project	Funding	FY 01	Total Sep. 30, 2001
Reconciliation of appropriations and allotments:			
Total allotted to Sep. 30, 2001		10,812,449,985	
Transferred to revolving fund:		24,944,460	
Surveys under Sec. 10, Flood Control Act of 1928 (not under MRC):		4,995,215	
Impounded savings withdrawn by Chief of Engineers:		1,607,475	
Total Appropriations to Sep. 30, 2001:			10,843,997,135
Appropriations for past four reporting periods were as follows:			
FY 98: $296,212,000	FY 00: $309,416,000		
FY 99: $323,636,541	FY 01: $359,458,292		

2. Totals for General Investigations include four projects transferred from Construction totals per DAEN-CWB-W, Aug. 4, 1978, teletype.

TABLE 41-X MISSISSIPPI RIVER AND TRIBUTARIES ACTIVE GENERAL INVESTIGATIONS (96X3112)

Item and CWIS Number	FISCAL YEAR COST Federal	Non-Federal	Total
SURVEYS (Category 110)			
Flood Damage Prevention (112)			
New Orleans District			
Morganza, LA to the Gulf of Mexico - 012875	122,845	430,676	553,521
Subtotal	122,845	430,676	553,521
Vicksburg District			
Southeast Arkansas Feasibility - 12756	749 040	339,754	1,088,794
Southwest Arkansas – 010436		348,660	348,660
Subtotal	749,000	688,414	1,437,454
Memphis District			
Reelfoot Lake, TN - 12394	135		135
Subtotal	135		135
Total (Category 112)	872,020	1,119,090	1,991,111
Flood Damage Prevention-Recon Study (113)			
St. Louis District			
MS River, Alex City, IL - 010462	467		467
	467		467
Memphis District			
Memphis Metro Area, TN & MS – 10461	432		432
Wolf River, Memphis, TN – 13157	23,673	1,022	24,695
Subtotal	24,105	1,022	25,127
New Orleans District			
Donaldsonville, LA to the Gulf of Mexico - 013510	68,402		68,402
Subtotal	68,402		68,402
Vicksburg District			
Coldwater Below Arkabutla Lake, MS – 081356	60,954		60,954
Olive Branch, MS – 081357	75,896		75,896
Subtotal	136,850		136,850
TOTAL (Category 113)	169,813	1,022	170,835
Flood Damage Prevention Feasibility Study (114)			
Memphis District			
Germantown, TN	39,219		39,219
Subtotal	39,219		39,219
New Orleans District			
Donaldsonville, LA - 013510	60,066		60,066
Subtotal	60,066		60,066
TOTAL (Category 114)	99,285		99,285

TABLE 41-X (Continued) MISSISSIPPI RIVER AND TRIBUTARIES ACTIVE GENERAL INVESTIGATIONS (96X3112)

Item and CWIS Number	FISCAL YEAR COST Federal	Non-Federal	Total
Special Reconnaissance Study (115)			
Vicksburg District			
Spring Bayou, LA – 081338	206,285		206,285
TOTAL (Category 115)	206,285		206,285
Comprehensive Feasibility Study			
Memphis District			
Memphis Metro Area, TN & MS - 010461	26,243		26,243
	26,243		26.243
TOTAL (Category 110)	1,373,647	1,120,112	2,368,231
COLLECTION AND STUDY OF BASIC DATA (Category 120)			
New Orleans District – Surveys, Gages & Observations – 81900	77,231		77,231
Vicksburg District - Surveys, Gages & Observations - 81900	221,540		221,540
Memphis District - Surveys, Gages & Observations - 81900	123,143		123,143
TOTAL (Category 120)	421,914		421,914
CONTINUATION OF PLANNING & ENGINEERING (Category 140)			
Flood Control Projects (140)			
Memphis District			
Reelfoot Lake, TN & KY, - 012394	586,510	160,770	586,510
Wolf River, Memphis, TN – 013157	91,442		91,442
Subtotal	677,952	160,770	1,442,959
TOTAL (Category 140)	2,120,910	160,770	2,281,680
PRE-CONSTRUCTION ENGINEERING & DESIGN (Category 160)			
Flood Control Projects (162)			
Memphis District			
Bayou Metro Basin, AR - 81307	4,899,519		4,899,519
TOTAL (Category 160)	4,899,519		4,899,519
GRAND TOTAL MR&T GENERAL INVESTIGATIONS	8,815,991	1,280,882	10,096,873

U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER

BACKGROUND

The research and development laboratories of the U.S. Army Corps of Engineers have served the Corps, the Army, and the Nation with technical accomplishments in a variety of engineering and scientific fields for more than 70 years. From beginnings in 1929 as a small hydraulics laboratory established to assist in developing a comprehensive plan for flood control of the Mississippi River to the 1999 establishment of the Engineer Research and Development Center (ERDC) consolidating the research and development efforts of the laboratories under the leadership of a single center, Corps' laboratories have been solving civil engineering and environmental quality challenges. ERDC offers a centrally managed center of eight laboratories that is the largest and most diverse civil and environmental research and development organization in the world.

During FY01, ERDC had 2,038 employees of whom 1,237 were highly trained engineers and scientists. The professional staff encompassed 307 Ph.D.'s and 504 Masters' degrees.

ERDC executed a Civil Works program totaling $153 million; of this total, $45 million was executed in direct allotted R&D Programs. The remaining $108 million was executed in support of USACE District and Division offices and non-Corps customers.

LABORATORIES

The diverse civil engineering and environmental quality research and development center consists of seven centrally managed laboratories located at Alexandria, VA; Champaign-Urbana, IL; Hanover, NH; and Vicksburg, MS. With world-renowned expertise and facilities, each laboratory adds a unique perspective and set of capabilities to the overall ERDC team.

Coastal and Hydraulics Laboratory

The Coastal and Hydraulics Laboratory (CHL) is the Nation's center for engineering and scientific research and development in the coastal, hydraulic, and hydrologic engineering and sciences. CHL is comprised of nationally and internationally recognized experts that perform research and site-specific investigations in the fields of rip-rap design; navigation engineering; pump station design; fisheries engineering; sediment transport; estuarine engineering; dredging; hydrodynamics; groundwater, watershed, and surface water modeling; coastal storm and flood damage protection; harbor design and modification; coastal and hydraulic structures; physical processes associated with water resources; environmental problems; military logistics-over-the-shore; wave climatology; and hydroinformatics.

Cold Regions Research and Engineering Laboratory

The Cold Regions Research and Engineering Laboratory (CRREL) maintains the finest research and engineering staff and facilities in the world for the study of cold regions science and technology. CRREL's experience spans nearly 60 years, starting with the Boston District's Soils Laboratory work on frozen soils in the early 1940s. The creation of CRREL began in 1961 with the merger of the Arctic Construction and Frost Effects Laboratory and the Snow, Ice, and Permafrost Research Establishment. This merger put DoD's principal cold regions expertise in one place.

The 1971 beginning of a long-term program by the Corps of Engineers to investigate ways of extending navigation on the Great Lakes-St. Lawrence Seaway throughout the winter also marked the beginning of Civil Works research at CRREL. As part of the Great Lakes-St. Lawrence Seaway Winter Navigation Demonstration Program, CRREL researchers investigated ice booms to impede the flow of ice into navigation channels. CRREL later developed various methods of keeping waterway locks ice-free, including the use of chemical coatings, saws for cutting ice from lock walls, and bubblers for preventing ice formation.

Construction Engineering Research Laboratory

The Construction Engineering Research Laboratory was chartered over 30 years ago to provide construction research that would address the entire spectrum of issues within military construction. This research is in support of sustainable military installations and encompasses construction, operations, and maintenance as well as environmental and safety

concerns. These technologies have universal application and are of extreme value in the Civil Works arena as well. Civil Works efforts historically have been in the areas of corrosion control, high performance protective coatings (including overcoating of lead-based paint), management tools for Operation and Maintenance optimization, and environmental sustainment.

Environmental Laboratory

The Environmental Laboratory is the acknowledged leader in environmental quality research and problem solution involving the consequences of water resources development, navigation, regulation of wetlands and inland and oceanic water quality, management of natural and cultural resources, and cleanup of contaminated groundwater sediments and soils. For over 25 years, an interdisciplinary staff of peer-recognized professionals, augmented with the finest network of academic and private scientists and engineers in the country, have provided the environmental quality technology necessary to further the Corps' missions.

Notable examples of recent accomplishments include wetlands research in support of Section 404 of the Clean Water Act; natural resource management to guide Corps stewardship at projects; improved techniques for stream and riparian restoration; research to accelerate growth of desirable, non-problem vegetation; distribution of the first-ever expert system/information manual on using biological control agents to manage nuisance aquatic plants; and providing guidance to the field on controlling zebra mussel infestations using anti-foulant coatings (paints, thermal metal sprays, etc.), and continuous backwash filter systems for intakes that supply irrigation systems, water supply, and other low-flow requirements.

Geotechnical and Structures Laboratory

The Geotechnical and Structures Laboratory (GSL) was formed in October 2000, by consolidation of the Geotechnical Laboratory, established in 1931, and the Structures Laboratory, formed in 1983 by combination of the Concrete Laboratory and the Weapons Effects Laboratory. The Concrete Laboratory had existed at WES since 1946, when it was transferred from Mt. Vernon, NY. Formation of GSL was undertaken to capitalize on research synergies that had been developing over the years involving prediction of behavior of structures built in or with earth materials and the effects of weapons and explosives on earth materials or earth construction. GSL conducts research in soil and rock mechanics, earthquake engineering and geophysics, tunneling and trenchless technology, engineering geology and seismology, vehicle mobility and trafficability, unexploded ordinance detection, and pavement technology. The Laboratory also researches the response of structures to weapons effects and other loadings, investigates methods for making concrete and other materials more durable and economical, studies the application of explosives technology to military and civilian engineering, and investigates the behavior of earth/structure systems subjected to blast loading and projectile penetration. GSL is a world leader in research on effects of earthquakes on embankment dams and the evaluation, maintenance, and rehabilitation of mass concrete, steel and reinforced structures.

Information Technology Laboratory

The Information Technology Laboratory (ITL) provides research, development, testing, evaluation, and services in the information technology, high performance computing, computer-aided engineering, interdisciplinary engineering, and computer science areas to ERDC, the Corps, Army, and DoD, as well as other Federal, State, and local agencies.

ITL manages the first High Performance Computing Major Shared Resource Center formed under the auspices of the DoD High Performance Computing Modernization Program; the CADD/GIS Technology Center for Facilities, Infrastructure, and Environment, a multi-agency vehicle to coordinate CADD/GIS activities within DoD and with other government agencies; one of two Corps of Engineers Enterprise Infrastructure Services Processing Centers providing 50 percent of the Corps' MIS data processing, along with the project management oversight of both Centers; one of the largest high-bandwidth, high-speed data communication networks in the world; and one of the finest civil engineering libraries in the Federal Government.

ITL is recognized for its expertise in the areas of high-performance computing; application of CADD, GIS, and Facilities Management technologies required by Army Civil Works projects; computer-aided interdisciplinary engineering and analysis; computer science applications; software engineering; large relational database systems; information management systems; high-speed communications; telecommunications; scientific visualization (including virtual reality); support to R&D and application efforts requiring sensors, sensor-integrating software, electronics, and feedback-control systems; office automation; graphic arts and publishing; library systems; records management; and collaborative technologies. ITL's expertise in these areas is applied to address problems in design, analysis, and management of projects and facilities in

support of the various missions of the Corps. During FY01, ITL commenced work on the Common Delivery Framework that will assist compatibility and functionality among USACE's diverse set of customers and business partners.

Topographic Engineering Center

The Topographic Engineering Center (TEC) provides new topographic capabilities in geospatial science to the Civil Work's community to ensure superior implementation of the nation's civil and environmental initiatives through research, development, and application of remote sensing, geographic information, global positioning, topographic, and information technologies. TEC scientists and engineers continue to developed faster, more accurate, and cost-effective ways to use new remote sensing technologies to describe, characterize, and analyze the surface of the earth. Remote sensing technologies form an essential part of a new national approach to infrastructure engineering and environmental stewardship.

Remote sensing tools can accurately characterize different surface characteristics, conditions and future states, including certain types and conditions of vegetation, soils, and surface water. With further development, this will provide support in an effort to monitor and predict changes in the biosphere. These tools provide indicators for the location of point and non-point pollution sources as well as advise of impending negative or positive trends. The extensive development of remote sensing technologies for use in construction, environmental rehabilitation, and resource management offer operational tools needed to increase capabilities to accomplish tasks otherwise not feasible, while at the same time performing existing tasks rapidly, accurately, and at the lowest possible cost.

ARMY CIVIL WORKS R&D PROGRAMS

Army Civil Works research and development efforts cover virtually the entire spectrum of technology and problem areas in the Army's Civil Works arena.

Infrastructure Engineering Research Area

The focus of the Infrastructure Engineering Research Area is to provide new or enhanced technologies to extend the life and reduce life-cycle costs of Corps' Civil Works facilities in an environmentally friendly and sustainable manner. These technologies are produced by aggressively developing high-performance materials and systems, with major emphasis in reducing rehabilitation and maintenance costs; refining material characterization; and improving analytical procedures to assess the adequacy of aging facilities and design/analyze rehabilitation measures. The research will furnish the Corps with improved analysis technologies to ensure a continued high level of safety and reliability, technologies to more economically design and construct required remedial and rehabilitation improvements, and technologies to conduct this work with minimum ecological impact, positive environmental support, and using sustainable methods and materials. The results of R&D efforts are posted on the web to assist rapid dissemination and updating as progress is made.

High-Performance Materials and Systems Program. This program is developing new and improved materials and technologies that will enable the Corps to significantly reduce project delivery times and operations, maintenance, and rehabilitation costs. Procedures for materials selection and mixture proportioning for a family of low-cost, high-performance concrete have been developed. Evaluation to quantify the effects of moist curing on the strength and durability of concrete repairs was completed. Performance criteria for polymer-modified cement repair materials were developed, and screening tests on shrinkage reducing admixtures were completed. Various combinations of cement, silica fume, fly ash, and blast-furnace slag were evaluated for strength and resistance to freeze-thaw cycles. Evaluation of air entrainment effects on durability was completed. An evaluation matrix was prepared and field evaluation of self-lubricating bushings for lock machinery applications was initiated and an evaluation of the performance of self-lubricating bushings for floating mooring bitts and culvert valves was completed. Recyclable steel abrasive was evaluated to determine the amount of rounding that occurred from reuse as well as the rounding effects on the adhesion of both organic zinc primers and metallized coatings.

Geotechnical Engineering Program. Stability of flood protection and storm damage reduction features has driven this program. Erosion of spillway channels was identified as a major concern and has become a high priority research effort. Final review and refinement of the SITES program, emphazing spillway problems, was completed. As piping and underseepage are critical problems, geophysical investigation of a levee reach with chronic seepage problems was performed. A GIS database for geotechnical data for selected case study locations was developed. As part of the Oahe Dam study, boring logs were incorporated into the GIS database to enhance the input to the 3-D Oahe Dam model.

Concrete and Structural Engineering Program. This program emphasizes the development of efficient concrete and structural engineering technology to significantly reduce construction and rehabilitation costs and to improve the durability, service life, and safety of the Corps hydraulic structures. This is the only Civil Works program that directly addresses R&D needs for steel structures. This program provides the advances to update the Computer Aided Structural Evaluation system used nationally and internationally for policy compliant design in district offices and by private industry for contract Corps work. A report on the interaction of Class C fly ash with Portland Cement was completed. Field exposure studies of various concrete mixtures under various environmental conditions were continued. Additional flange connection types were identified for analysis while evaluating improved connection details for downstream flange connections.

Earthquake Engineering Program. In spite of major advances over the last 35 years, serious gaps in our knowledge base still exist in the areas of earthquake hazard predictions; site characterization for seismically sensitive parameters; constitutive behavior and material properties of rock, soils, and composite (reinforced) materials under seismic loads; and the stress and deformation responses of sites and facilities to seismic loading. Economical remediation and defensive design techniques are needed in addition to careful calibration of fast advancing numerical methods to actual field performance. In order to address these issues, this program is producing design tools and criteria that incorporate innovative measures for increasing the seismic safety of Corps and other public facilities.

A potentially significant breakthrough in liquefaction analysis of soils was observed in this program. In centrifuge experiments it was observed that liquefaction, defined as dynamically induced pore water pressure increase equal to the vertical effective stress, cannot occur at confining stresses greater than 3 atm. This finding significantly reduces the extent and cost of remedial construction needed to assure seismic safety for embankment dams. Strain-controlled harmonic cyclic evaluations were performed to better understand response of intake towers during seismic events. New features were incorporated into the dynamic nonlinear analysis code to improve its stability and convergence characteristics. In addition, a preprocessor module is under development as an additional tool to help the user with data input and model definition. NW Cascadia Subduction Zone module, CEUS source zones, COMOS data link, and new and updated attenuation relationships were added to the ground motion analysis system.

Risk Analysis for Dam Safety Program. The focus of the Risk Analysis for Dam Safety Program is to provide aid in allocating investments to improve the safety of Corps' dams. All Federal and state agencies, responsible for the design, construction, operation, or regulation of water resource projects, have recognized the need for making sound investment decisions regarding dam safety. The USACE is responsible for managing risks for its 569 dams and protecting the public from the devastation that could be caused by catastrophic failure. While many of the USACE civil works projects have not been subjected to their maximum design conditions, 65 Corps' dams have been identified as being hydrologically or seismically deficient. Developing and implementing risk analysis methods will enable the Corps to prioritize dams requiring initial investigations and subsequent analyses; prioritize funding for critical repairs, rehabilitation, or modifications; select and justify the optimal plan to protect human life, reduce property damage, and mitigate environmental damage; minimize the disruptions of service; and maximize effectiveness of infrastructure investments. A multi-agency, multi-national workshop was held to evaluate the current use of risk analysis for dam safety and provide an assessment of the USACE planned research program to ensure it will meet USACE's future needs. Several demonstration projects were conducted to document the development and fine-tuning of risk analysis procedures for a single dam site and for a regional portfolio of dams. This process has led to the formation of a cadre of Corps personnel experienced in execution of these engineering risk studies.

Navigation Systems Research Area

The Corps of Engineers' navigation mission is to provide safe, reliable, efficient, effective, and environmentally responsible waterborne transportation systems (channels, harbors, and waterways) for movement of commerce, national security needs, and recreation. The U.S. Marine Transportation System (MTS) consists of over 300 ports, 1,000 harbor channels, and 25,000 miles of navigation channels, and is an integral part of both the U.S. economy and national security system. The MTS contributes more than $700 billion per year to the gross domestic product, produces $150 billion per year in federal taxes, and employs more than 13 million people. It supports rapid deployment of military forces and movement of equipment and supplies from strategic ports. Despite its importance, the MTS is under serious strain. The Congressionally-mandated interagency MTS task force and maritime industry report that commercial navigation will double by 2020; yet the MTS is already operating at near-full capacity in many areas and is being challenged by new vessel designs

and traffic loads which exceed its channel, harbor, and lock capacities. Eighty-three Corps' locks are older than their 50-year design life, and 11 of them are over 80 years old.

In light of these pressing national needs, this research and development area provides tools and technology for the Corps of Engineers to improve the navigation system's functional performance, preserve and enhance environmental quality of our waterways, reduce unit costs, and improve safety. Specific objectives of this research area are to develop engineering technologies that increase the effectiveness and reduce the per project costs of harbor and channel projects that provide deep-draft and shallow-draft navigation for domestic and international commerce.

The Navigation Systems Research Area includes specific shallow-draft and deep-draft (including Great Lakes) focused R&D programs in coastal and inland channels, sedimentation and dredging, structure evaluation and design; specific research on Innovations for Navigation Projects; and new strategic initiatives in regional sediment management. Under these programs, engineering tools, computer models, and design guidance are developed for defining and managing water levels and currents that affect navigation and sedimentation, waves that impact coastal structures and drive sedimentation processes, sediment that settles in navigation channels and harbors, and vessel transits within navigation channels and structures. Other engineering tools, computer models, and design guidance are developed to enable rapid and economical navigation facility design, construction, repair, and rehabilitation. This research area balances efforts on critical present-day problems facing the Corps of Engineers with those that prepare the Corps to meet U.S. navigation system needs of the future.

FY01 accomplishments for these research efforts include developing guidance for various design efforts. Bendway weir structures design, design of navigation channels used by mixed fleets of shallow- and deep-draft vessels, and generalized design guidance on the layout of approach conditions to locks to reduce delays and increase capacity was completed. Other structure-related accomplishments include guidance and technologies for design, construction, and repair, including preparation of final guidance for the design and use of precast, thin-wall panel components. Soil-structure interaction studies were performed on flexible retaining walls with multiple rows of anchors. Interim guidance was developed for the design and construction of connections and seals for large precast concrete modules and for selection of methods and techniques to position and stabilize equipment/modules to allow positioning and placement of large float-in and lift-in precast sections within allowable tolerances. Concrete mixtures were evaluated using water quality rating procedures, and a report documented performance requirements, materials selection, proportioning, and water quality. Installation of float-in units for construction of dams was evaluated in field applications. Investigations needed for updating design criteria for use on the construction of lock floor slabs and culverts underwater were completed. Also, individual components of the in-chamber longitudinal culvert design for lock filling and emptying systems were evaluated to find ways to improve the efficiency of the system through modification of these components.

Wave and littoral transport models were improved by incorporating more realistic physics and a standard graphical user interface adapted for using the physics. Extensive field data sets were used to improve the models' formulations and prove their reliability. The coastal Sediment Budget Analysis System was fielded and a Diagnostic Modeling System for coastal channel sedimentation problems was put into trial use on several projects. These tools will collectively provide the Corps with more effective management of coastal navigation projects with less impact on adjacent shorelines.

Innovations for Navigation Projects (INP) Program. The program was established to aid districts in their efforts to provide innovative approaches to construct navigation projects. The objectives of this multi-laboratory, multi-discipline program are to identify and develop technologies and methods to reduce construction time and cost and minimize disturbance to navigation and the environment during construction. The focus is on technologies for lift-in, float-in, and in-the-wet construction. This will include designs for new filling and emptying systems for locks, the use of alternative construction methods, underwater construction with pre-cast concrete elements, underwater concrete placement techniques, construction of foundations under water, quality-assurance/quality-control techniques, design of innovative lock walls for a barge gate impact load, innovations for lock gate operating equipment, and contracting procedures for innovative designs and construction methods. Criteria will be provided for enhanced construction materials such as controlled, low-strength materials for backfill, underwater concrete for foundations and filling pre-cast modules, lightweight concrete for float-in construction, and connections and seals for joining pre-cast elements and modules under water.

Research studies in the Innovative Navigation Projects (INP) research program neared completing

major tasks during FY01. A technical report on the state of the practice in the design of tall, stiff, flexible tieback retaining walls was completed. Draft criteria for the design and construction of thin-wall concrete panels were developed. Laboratory experiments for the development of a filling and emptying system for the extension of 600-ft locks were completed. Analyses of data from full-scale barge impact experiments for use in the development of an analytical model were completed. Available information on the design and construction of connections and seals for large precast concrete modules placed underwater was compiled. The evaluation of equipment and procedures for positioning and stabilization of equipment/modules associated with in-the-wet construction of navigation structures with large precast concrete sections was completed. A specification for the use of anti-washout admixtures was drafted, entitled "Standard Performance-Based Specification for Antiwashout Admixtures for Concrete," and is in review for a handbook and for publication by ASTM. A field demonstration was conducted to evaluate the use of concrete to fill precast concrete shells. Creep and tensile strain capacity tests on high-strength structural low-density concrete were completed. A report entitled "Guide for the Use of Low-density Concrete in Civil Works Projects" was completed and prepared for field review. Laboratory experiments with a single culvert design for in-chamber longitudinal culvert systems were completed, and a technical note containing results of the performance experiments for ILCS laboratory model with different port configurations and single culvert design was published. A demonstration of an acoustical imaging system was conducted in the laboratory. This small demonstration generated a tremendous amount of interest from district offices, resulting in plans for a field demo in FY02.

Flood and Coastal Protection Research Area

The Corps of Engineers' flood and coastal storm damage reduction mission is to provide safe and reliable projects that reduce damages to property and prevent loss of life from both inland and coastal flooding. The Corps maintains over 8,500 miles of levees and operates 383 major lakes and reservoirs to reduce flood damages. In spite of the completed projects and in-place infrastructure, there are over $4 billion in flood damages annually. The overall objective of research in this area are to develop new flood and coastal storm damage reduction technologies to enhance the effectiveness of projects, develop innovative techniques to reduce flood and coastal storm damages, and allow the integration of analysis tools to accelerate the study and design process for both inland flood damage reduction and coastal shore protection. Engineering tools, computer models, and design guidance are developed for riverine flood analysis, channel restoration evaluations, improvements in ice engineering, and evaluation and improvement of multi-dimensional hydrodynamic modeling.

Flood Damage Reduction Program. This program conducts research and development in support of the primary Civil Works mission area of flood and coastal storm damage reduction. In the inland area, focus for new projects has shifted from large flood damage reduction projects towards watershed management and smaller flood damage reduction systems. This shift has required an emphasis on the development of appropriate design guidance and planning and engineering technology to accelerate the process of restoring channels in a more cost-effective and environmentally sound manner. The sedimentation response of flood-control channels; improved conditions for navigating in deep-draft and shallow-draft channels; bank protection methods for flood-control and navigation channels; and ice impacts on flood-control and navigation channels and structures are being addressed.

Accomplishments during FY01include: guidelines for evaluating channel stability and sedimentation relative to the design and maintenance of vegetated flood control channels; development of a procedure for determining roughness losses and water surface elevations in compound, meandering channels; guidance for determining the channel discharge that is predominant in forming the channel; a workshop to identify the highest research needs in the area of urban flooding; identification of existing GIS/H&H and remote sensing capabilities with respect to existing levees for use in future data base development; demonstration of field laptop GPS/GIS mapping for use in flood fighting existing levees with communication to the command center; waterproof handbook for flood fighting operations was completed; the Ice Jam Database, which contains over 11,000 entries, is now fully accessible and searchable on the WEB for use in response to emergency situations and for background information for ice jam flood control studies; laboratory tests have been performed to enhance the effectiveness of high flow bubbler systems for ice and debris control at locks and dams; development of particle dynamic computer simulation model of ice transport and accumulation in lock approaches for use in the evaluation of proposed ice management methods; design guidance (stone size, slope, substrate) to mitigate ice damages to riprap installation has been finalized from the results of laboratory tests; and release of new methods and associated software (River Analysis System, Hydrologic Modeling System, Flood Damage Analysis

Package, new Reservoir System Simulation, and a new software system using digital terrain and GIS for the Corps' hydrologic and hydraulic modeling packages) that greatly improve the efficiency and accuracy of planning, design, and operation of flood damage reduction projects and support field office flood damage reduction studies and reservoir operations.

Innovative Technologies for Flood Damage Reduction Program. The Innovative Technologies for Flood Damage Reduction Program (ITFDR) was initiated in FY01. This program is aimed at addressing Corps priorities in the areas of innovative flood fighting technology for existing flood damage infrastructure, especially levees. New technologies are needed to assure existing levees provide the authorized level of protection and to assist with flood fighting operations. Innovative use of remote sensing for detection of weakened levees, satellite linked GIS/GPS laptops to assist with onsite flood fighting, and improved flood forecasting capabilities must be integrated.

FY01 accomplishments for the ITFDR included development of a PC-based reference database with abstracts of over 50 pertinent articles and state-of-the-art papers related to the phenomenon of internal piping; development of piping occurrence database; completed preliminary empirical model of levee potential for piping using statistical analyses and the GIS data for the Memphis District site; established formal ties to the Dam Safety Interest Group Geophysics Program; developed a design for and constructed a laboratory cell to measure self-potential coupling coefficients; and determined potential for upgrading capability of the self-potential modeling program SPPC.

Cold Regions Engineering Program. The Cold Regions Engineering Program focuses on alleviating problems from winter weather that impact Corps navigation and flood damage reduction projects. Ice formation and breakup in rivers and lakes impedes navigation, causes flooding, and adversely affects navigation, flood control, and water supply structures. Winter conditions also impact the hydrologic cycle, fisheries, and aquatic habitats. The program addresses the impact of ice on inland navigation project operation and maintenance, severe ice jams and related floods, ice hydraulics and damage to shorelines and structures, and hydrology and water resources in cold regions.

In FY01, the ERDC/CRREL Ice Jam Database, now containing more than 12,500 entries, was enhanced for use by Corps districts in response to emergency situations by providing the capability to download ice jam information to a hand-held PDA on a state-by-state basis. Historical ice jam mapping and map-based query capabilities were also added. Ice jam emergency operations and mitigation were also addressed through involvement in the New England ice jam web site developed to support North Atlantic Division Emergency Operations. A low-cost remote system to monitor stage fluctuations due to ice jams and provide alarms via cellular or hard-wire telephone was designed and implemented. Stage data is available via an ERDC/CRREL web site. An improved ice jam prediction model based on artificial neural networks was developed and tested. An energy-based terrain segmentation scheme for distributing 1-D snowmelt algorithms across watersheds was developed and validated. Real-time updating of the river ice forecast model was programmed to include data assimilation of stages, observed ice extent, and water temperature. The three-dimensional discrete element model (DEM) coupled with a one-dimensional depth-averaged unsteady hydraulic model was modified for use in simulating river ice transport, ice jam formation, and ice-tow interaction in natural channels. Progress was made on coupling the DEM to a 2-dimensional flow model for simulating ice and debris passage at lock approaches. Physical and numerical modeling of ice and debris boom performance at marginal velocity conditions, which has application to ice control in lower Missouri and mid-Mississippi Rivers as well as proposed new Ohio River lock intake configurations, was completed.

Environmental Technologies Research Area

The Corps operates and maintains 25,000 miles of inland and coastal navigation waterways, 562 reservoirs (5,500,000 surface acres), 237 navigation locks, 926 harbors, 75 hydropower projects, 879 flood control projects, and thousands of acres of adjacent lands as part of its water resource mission. Wide-ranging environmental stewardship is an integral part of Corps water resource management. Moreover, recent U.S. figures have estimated $16 billion per year in damages caused by point- and non-point-source pollution and up to 1 billion tons per year of eroded soils and industrial and agricultural contaminants deposited in the Nation's waterways. Over 12,000 miles of streams and rivers are directly impacted by acid mine drainage from an estimated 200,000-500,000 abandoned mines. These impacts are severely affecting multiple project uses, impeding navigation, and negatively affecting human and ecological health. A critical part of the Corps mission is to ensure that project planning, construction, operation, and maintenance activities address critical environmental problems and incorporate environmental stewardship and sustainability considerations, while ensuring economic viability. The Environmental Technologies Research Area addresses the highest

priority technical problems with state-of-the-science, cost-effective technologies for managing natural resources at Corps projects including: the development of system-wide modeling, assessment, and restoration technologies; ecosystem management and restoration; wetlands functional values; habitat management techniques for biota, including threatened and endangered species; assessment and management of water quality problems; and the identification, assessment, and management of contaminated sediments. This Area is providing scientifically proven and demonstrated economical solutions to the Corps' highest priority environmental problems, reducing unnecessary regulatory burdens, and providing environmental stewardship with a very high return on taxpayer investment.

Water Quality Research Program (WQRP). The WQRP conducts research on water quality problems for all Corps inland reservoir and waterway projects, providing cost-effective methods, applications, and guidance for problems related to managing project water quality. The direct application of technologies developed through research in the WQRP has resulted in improved water quality at Corps projects, reduced costs of required monitoring, and provided new and better predictive capabilities. In FY01, the WQRP developed water quality management strategies based on the relationships between reservoir design and operation and water quality; developed the capability to determine non-point source water quality runoff through watershed modeling; and developed a version of CE-QUAL-W2 that can incorporate sloping river sections, multiple reservoirs, and estuaries in a single computational grid.

Ecosystem Management and Restoration Research Program (EMRRP). The goal of the EMRRP is to provide state-of-the-art science and engineering technologies and guidance for the Corps to use to predict, evaluate, and reduce environmental impacts resulting from Corps water resources projects. The EMRRP also provides tools to design, manage, and maintain restoration and development projects on streams and riparian ecosystems. The EMRRP investigates: a) rapid/cost effective quantification and assessment methods, b) design and construction specifications for wetlands/streams/riparian restoration activities, c) capabilities to predict ecosystem impacts, d) habitat restoration techniques for species of concern, e) ecosystem management and decision support systems, and f) basic ecosystem processes.

Long Term Effects of Dredging Operations (LEDO) Program. The LEDO Program directly supports dredging and contaminated sediment programs involving the Corps water resources development mission. Since the effects of high profile, new toxic substances and pathogen microbes in contaminated sediments are not well known, identification, assessment, and interpretive techniques are underdeveloped. Environmental, legislative, and public interest groups' concerns are intense and result in a plethora of laws, regulations, and litigation to address concerns. This program was designed to address all these shortcomings. Research findings address disposal management, to include aquatic, wetland, and upland disposal alternatives; identify environmentally important classes of toxic substances associated with these sediments and their acute, chronic, and sublethal assessment; and provide tools and procedures to quantify the effects and exposure components of the risk and support implementation of the Corps/EPA Technical Framework, associated manuals, and legal requirements. The objectives of LEDO are to:

- Provide a cost-effective, yet environmentally sound, risk-based approach (including effects assessment, exposure assessment, risk characterization, and risk management) to managing sediments contaminated with high profile toxics and microbial pathogens that will allow the Corps to meet its dredging and environmental constraints in a cost-effective manner.
- Support environmentally sustainable restoration.
- Reduce or eliminate unnecessary constraints.

Major accomplishments during FY01 included guidance on the potential for using Gut Fluid Extraction as a predictor for Whole Organism Bioaccumulation, the use of Geosensors to screen for effects on Infaunal Invertebrates, an approach to assess bioaccumulation using an Effects-Based Model, and compiling information on existing sediment physicochemical characteristics relating to Hydrophobic Organic Contaminants.

Geospatial Technologies Area

The Geospatial Technology Area comprises Survey and Mapping, Remote Sensing, and Geographic Information Systems (GIS). Activities within this area focus on collection, management, analysis, and exploitation techniques for information tied to the earth's surface and subsurface (geospatial data). Typical data types include bathymetric and topographic survey, digital elevation models, dredge cuts, placement sites, sub-bottom compositions, soil types, wetlands, land cover, endangered species and their habitat, stream and tide gages, cross sections, training structures, levees, dam deformation, HTRW sites, permits, piezometers, archeological sites, snow water content, Corps projects, relief wells, damage from disasters, recovery

activities, mission status, etc. Data may be collected for and analyzed for projects at specific sites or as part of systems: from sub-basins to large river systems, from individual beaches to large coastal segments. Other objectives of this Area include automated presentation capability, improved QA/QC, improved data retention and longer data life, reduced re-collection costs, increased data sharing, and improved, more defensible decision making. These efforts support decision makers in all Corps business areas: navigation, flood control, hydropower, regulatory, environmental, emergency management, recreation, water supply, and work for others. Accurate and reliable geospatial data are required by each business area for the effective planning, design, construction, operation, maintenance, and rehabilitation of projects. Annual expenditures for these data average $200M, thus significant savings from more effective and efficient data collection and management technologies, data analysis, and data exploitation will be realized.

Survey and Mapping Program. ERDC continued its research efforts developing surveying and mapping standards, procedures, and tools for use by the Corps, industry, and the general public. The Electronic Chart Data program was initiated to convert the current navigation chart books into a standard electronic format for use with commercial software to read, display, and perform navigation functions for waterway users. Evaluations were conducted on acoustic and ground penetrating radar for detection of objects such as buried cables and wing dams in navigable waterways. ERDC collaborated with industry to develop new software capabilities that would allow the exchange of Corps map data layers, vector features, and imagery for display on any map browser. National data from other government agencies can also be used with this capability. An interim report on the use of new remote sensing radar technologies was produced, documenting accuracies and comparisons with conventional survey data. Evaluation of procedures to improve the accuracy of current military GPS receivers for civil applications was completed.

Remote Sensing Program. A new, high-precision method for automated classification of remotely sensed data was developed and distributed. Methods for the distribution of high-resolution satellite imagery for natural resource inventory were developed and tested. Development of new methods for using radar to measure snow extent, snow water equivalent and liquid water content, and ground freeze-thaw and moisture state for improved water control was initiated. An evaluation of the suitability of airborne digital imagery for emergency management with procedural guidelines for acquiring and using the data was completed. Development of new techniques using satellite and airborne systems to remotely measure reservoir quality was initiated.

Geographic Information Systems (GIS) Program. Release of HEC-Flood Damage Analysis 5.0 with Integrated GIS capabilities was accomplished. Procedures and guidelines for the specification of accuracy of geospatial data and analysis processes were documented. Methods for the integration of Corps real estate data into GIS were developed and documented. Development of Arc IMS emergency management applications to improve interactive map production for flooding, including integration of WMS-produced flood polygons, was initiated. Linkage of Laboratory Information Management Systems for hazardous waste with commercial GIS was successfully demonstrated. Standards were adopted for the seamless integration of simulation models and commercial GIS software. Interoperable web-based geospatial technology incorporating industry specifications for flood simulation was demonstrated. Preliminary preprocessing algorithms for the integration of Digital Elevation Models into hydraulic models were developed.

Remote Sensing and Geographic Information Systems Center (RS/GISC). The RS/GISC is the Corps' Center of Expertise for Civil Works remote sensing and GIS and is the principal catalyst for the evolution and application of emerging remote sensing and geographic information systems technologies in execution of the Corps' Civil Works planning, engineering, operations, and maintenance activities. As the Corps' "One door" to ERDC geospatial capabilities, the Center provides cost-effective technology transfer and applications development in support of Corps mission responsibilities in all business areas: navigation, flood and coastal storm damage reduction, hydropower, regulatory, environment, emergency management, recreation, water supply, and work for others. Continuing interaction with other researchers and practitioners throughout the Corps, government, the private sector, and academia assures knowledge of evolving trends that are important for the Corps and that duplication of effort is avoided. The RS/GISC manages the Corps' geospatial research and development program area, remote sensing and GIS research and development programs, emergency management RS/GIS support, RS/GIS activities in the Corps' Water Control Data System (WCDS) Software Modernization Program, GIS support for the national management of Formerly Used Defense Sites (FUDS) cleanup, and GIS and remote sensing assistance in the delineation and mapping of wetlands. The RS/GISC also acts as the principal technology assistance hub for new

applications of RS/GIS technologies for the Corps district offices across the nation.

Based in the RS/GISC, Remote Sensing (RS) and Geographic Information Systems (GIS) research programs support the Army's civil works mission by improving methods for acquisition, image processing, and development; management; and analysis of geospatial data. An enterprise approach to corporate geospatial data and the integration of all geospatial data (data from GIS, RS, survey and mapping, and CADD), and the development of applications meeting the needs of Corps civil works business areas are critical focus areas. Accomplishments in FY01 include: serving as the key resource and technology point of contact for the US Army Corps of Engineers for Civil Works remote sensing and GIS; acquiring and distributing enterprise geospatial data to all Corps entities and with HQUSACE evaluating Corps geospatial data requirements; continuing technology transfer through training courses, briefings, technical papers, technical demonstrations, pilot programs, and conferences; working with Northwest Division and districts to develop a prototype regional corporate GIS; developing national geospatial data viewers for Corps programs; providing the venue for and teaching seven Corps PROSPECT GIS training courses for over 175 students and initiating development of a PROSPECT image processing course; providing state-of-the-art remote sensing, image processing, and geospatial data systems support to the Corps' Civil Works Program through management of the remote sensing and GIS R&D programs; providing support to Corps' district offices for the development of implementation plans for geospatial data management including development of enterprise geospatial data approaches; support of one stop service requests from Corps districts and divisions; developing and distributing nonproprietary national geospatial data coverage for emergency management and other Corps business practice applications; membership in the CADD/GIS Technology Center's advisory support team; working with districts, other federal and state agencies in support of the International Joint Commission's Great Lakes study; participating in development of Future Operating Capabilities and a redefined strategic approach to Civil Works R&D; sponsoring and participating in program development of national and international remote sensing and GIS conferences; developing and transferring improved techniques for the integration of snowmelt into water control activities; and participation in the Partnership for Peace Information Management System to use GIS in the simulation of flooding in the Trans-Carpathian region.

Other Research Areas

Aquatic Plant Control Research Program (APCRP). The APCRP is the nation's only federally authorized research program providing the technology to manage nonindigenous aquatic plant species. The objective of the APCRP is to develop cost-effective, environmentally compatible aquatic plant control technology, including biological, chemical, ecological, and integrated control methods. APCRP research is producing information on the growth and ecological requirements of problem aquatic plants and is producing new biological, chemical, and ecological technologies for their control. Specific information on the biology and ecology of problem aquatic plants, obtained through research in the APCRP, has greatly improved the efficacy and diversity of management options, while minimizing adverse effects on the environment. Annual cost savings resulting from application of APCRP research results nationwide are estimated at $20-30 million.

In FY01, the APCRP updated the computer-based Aquatic Plant Management Information System that guides users in selecting control options and formulating cost-effective management plans for most site-specific plant problems; developed a biological formulation in partnership with industry for controlling hydrilla; and formulated an Endothall herbicide polymer that significantly reduces human health hazards associated with incidental exposure and concentrates effects in a closely defined area for maximum control at minimum cost.

Dredging Operations and Environmental Research (DOER) Program. The DOER Program is an extremely important effort that combines engineering, operational, and environmental components of waterways' management to address issues impacting our ability to maintain a safe, reliable, environmentally sustainable and economically efficient navigation system. The program has validated the near-shore placement of mixed-grain sediments that, coupled with the recently developed knowledge of chronic turbidity on fishery resources, will allow for environmentally acceptable aquatic disposal of dredged material at minimal cost and positive environmental impacts. Using DOER research results and in conjunction with the National Research Council, guidance was prepared to help lessen the negative impacts of environmental windows (seasonal restrictions) on dredging through a thorough knowledge of various impact categories and use of operational guidelines. Guidance is being developed to fully assess bioremediation, solids separation,

and phytoreclamation of contaminated dredged material in traditional confined disposal facilities for beneficial reuse of the material. A PC-based human health and ecological risk assessment program was completed that provides a quick and accurate decision support tool for evaluating dredged material disposal and management alternatives. Innovative dredging and placement technology and operations and management techniques that will reduce cost, take less time, and are environmentally friendly (e.g., silt wing, super dust pan dredges, and telescoping weirs) are being demonstrated at typical navigation projects.

Research continues in the following six areas to address the navigation dredging and environmental protection mission:

- Contaminated Sediment Characterization, Management, and Treatment (reduce costs, increase options).
- Dredge Instrumentation to Improve Efficiency (includes contract and environmental compliance).
- Near-shore/Aquatic Placement of Dredged Material (in coastal, estuarine, and river waters).
- Environmental Windows for Dredging Operations (assure environmental sensitivity as well as realistic controls based on facts).
- Cost-effective Application of Innovative Technologies (includes contracting and other dredging activities).
- Environmental Risk Assessment and Management for Dredged Sediments (factors economics, engineering, human health, and ecological and comparative risk).

Future plans for DOER include the development of guidelines for environmentally acceptable methods of aquatic placement of mixed (fine- and coarse-grained) sediments along with a database of dredged material geotechnical properties that can be used for modeling and related design. Significantly improved models for accurately predicting sediment resuspension at different dredges will be completed and will be an integral component of the Corps' dredged material management and regulatory program. The program will complete research on field validation of chronic/sublethal testing, CDF effluent treatment, manufactured soil, biomarker analyses, runoff testing, environmental effects in CDF's, and biomarker analyses leading to more efficient and acceptable dredged material management. Environmental windows research will emphasize collaborative interagency studies of physical monitoring of suspended and settled sediments and associated effects on sensitive biota in support of science-based determination of windows for effective protection while maintaining necessary navigation in an economically efficient manner. Risk assessment PC-based decision support tools will be completed for all environments for rapid automated field use and complete theoretical bioaccumulation potential uncertainty analyses. These will be an integral component of the Corps' operations and regulatory program as well as negotiations with state environmental agencies. Innovative (off-the-shelf) technologies that can be applied to Corps navigation projects will be pursued. Alternatives to traditional dredging will be evaluated to determine the feasibility of extending periods between required channel maintenance. Innovative dredging and placement equipment, operations, and management techniques that will reduce costs, take less time, and are environmentally friendly will be high priorities. Lastly, research will be initiated on developing improved sensors to measure dredged material loads removed by hopper dredges, and silent inspection for scows and barges will be completed. These will be routinely available, cost-reducing components of the navigation dredging program.

Recreation Management Support Program. The RMSP conducts research and provides related technical assistance in support of the Civil Works Recreation Business Area. The program is divided into three major elements: management studies, management assistance, and information exchange. Major accomplishments in FY01 included:

- A knowledge management Website (the NRM Gateway) was deployed that provides Corps natural resource managers with over 12,000 pages of information. The site has received over 600,000 hits since April 2001.
- Recreation trends affecting the Corps' recreation program were monitored. Results were integrated into a Corps recreation program strategic plan.
- A technical report on research to identify recreation needs of ethnic minority visitors was published.
- A technical report on research to assess the regional economic effects of recreational use of Corps projects was published.
- A process to define national goals for the Corps' recreation program was facilitated.
- Technical assistance was provided to field staff on the use of the Visitation Estimation and Reporting System and Automated Use Permit System.

Aquatic Invasive Species Research Program (AISRP). The Aquatic Invasive Species Research Program (AISRP) is an expansion of the existing Zebra Mussel Research Program (ZMRP). The expanded program will address all invasive species except aquatic plants. The Corps of Engineers is responsible for the construction, operation, and maintenance of Corps facilities in navigable waters and the resources associated with them. It is estimated that over 100 invasive species are introduced into U.S. waters annually, which can impact facility operations and threaten valued natural resources. Zebra mussels alone cost the public over $1B annually. Methods of prevention and more effective, inexpensive methods of control of invasive species must be developed to prevent impacts to public facilities and protect valuable natural resources.

The AISRP/ZMRP is coordinated with the research programs of other Federal, regional, and state agencies, and private industry through the Zebra Mussel Coordination Committee, established under the Nonindigenous Aquatic Nuisance Prevention and Control Act. Successes to date under the ZMRP include completion of a 5-year evaluation of coatings and materials to prevent zebra mussel attachment. Published results present significant savings to power plants, the boating industry, and Corps facilities. In addition, the most widely used means of non-chemical control (thermal shock, desiccation, and freezing) were directly derived from the ZMRP research efforts on physiological factors affecting the control of zebra mussels. The ZMRP is transferring this technology through a CD-ROM information system (updated yearly) and an engineering handbook for facility managers and operators of locks and dams, water supply and treatment facilities, power plants, and vessels. The CD-ROM (over 7,000 distributed to date) and handbook help managers and operators determine the vulnerability of their facility and outline control options.

AISRP accomplishments in FY01include:

- The ZMRP was changed to the Aquatic Invasive Species Research Program (AISRP), and research efforts were expanded to address all invasive species except aquatic plants.
- Dispersal barrier technology and methods to prevent tow traffic dispersal of invasive species were developed to protect valuable ecosystems.
- Canonical correlations of phylogeographic zebra mussel distributions to physical and biological characteristics of river systems were used to identify range-limiting factors for zebra mussels.
- Molluscivores were examined for their potential to effectively control invasive mollusks such as *Corbicula* and zebra mussels.
- The Zebra Mussel Information System was expanded into an Aquatic Invasive Species Information System.

Water Operations Technical Support (WOTS) Program. The WOTS Program provides comprehensive and interdisciplinary technology transfer and technology application to all Corps water resource projects. WOTS is managed to maximize cost-effectiveness and ensure broad dissemination and implementation of technology and information. The program provides effective environmental and water quality engineering technology to address a wide range of water resource management problems at Corps reservoir and waterway projects and in the river systems affected by project operations nationwide. In addition, WOTS provides technology to address problems caused by zebra mussels and other non-indigenous aquatic species, tail-water fisheries at pump-back hydropower projects, water quality impacts of shoreline erosion control and reservoir sedimentation, and other project operations related to environmental and water quality issues.

Since its inception, the WOTS Program has successfully responded to over 1,200 requests for direct technical assistance and over 2,000 one-stop service requests from all Corps districts throughout the Nation. These requests have significantly improved water resources uses, benefits, and operations. The program annually publishes numerous copies of manuals, bulletins, notes, and reports. WOTS annually conducts specialty workshops, training personnel on the latest environmental and water quality management techniques. WOTS continually endeavors to coordinate with water quality elements of other Federal agencies such as the Environmental Protection Agency, Tennessee Valley Authority, Bureau of Reclamation, Fish and Wildlife Service, and the Bonneville Power Administration. These efforts have involved watershed management activities, the spread of zebra mussels, the impacts of hydropower facilities, and cold-water releases. In FY01, the WOTS Program conducted six technology demonstration efforts to verify management strategies and techniques, four training workshops on environmental and water quality management techniques, and prepared eleven technical publications for distribution to the field.

Dredging Operations Technical Support (DOTS) Program. The DOTS Program fosters the "one-door-to-the-Corps" concept by providing comprehensive and interdisciplinary technology transfer,

technology application, and necessary engineering, operational, and environmental training of all stakeholders for all Corps navigation dredging projects. DOTS houses the Corps' technology and information database and is managed from a centralized program to maximize cost-effectiveness and implement National policies, laws, and complex technical requirements on a consistent basis. DOTS is fully accessible through the Internet and has received thousands of visits from navigation stakeholders. The DOTS Program is a storehouse focusing on application of state-of-the-art technology and research results to field problems. Emerging scientific approaches sometimes cause uncertainty in administration of the Corps' navigation dredging program. As such, DOTS provides a consistent technology base and ready response and training on technical issues through a readily accessible technology transfer capability and generic technology application to other projects with similar problems. Short-term work efforts to solve generic Corps-wide technical problems for maintaining navigable waterways are major features of the DOTS Program. Technology transfer of new and emerging techniques for application at Corps and stakeholders' navigation maintenance projects is an important DOTS activity. In response to new research results and continuing staff reductions, the DOTS Program will continue to expand to provide technology transfer to all O&M navigation projects and be fully responsive to stakeholder needs.

Special emphasis is placed on transfer of technology developed by the Corps and others to include proven international technology that deals with maintenance and management of navigation structures and navigable waterways. Typical technology transfer and training includes management of contaminated dredged material, application of innovative risk-based technologies to contaminated dredged material, maintenance of coastal inlets and adjacent shorelines, shoreline stabilization and river training activities, assessment and management protocols for beneficial uses of dredged material, channel realignments, protection of endangered species, equipment selection, rational application of dredging windows, lock and dam maintenance needs, channel and harbor maintenance activities and ship simulation activities.

A key feature of the program is effective, annual face-to-face and Internet on-line training of Corps staff, navigation stakeholders, and others who have regulatory authority over Corps navigation maintenance activities on the latest environmental and engineering techniques associated with maintaining navigable waterways. The program also supports joint USACE and USEPA activities dealing with environmental aspects of the national navigation program.

Management Tools for Operation and Maintenance (O&M) Program. Due to increasing O&M budget constraints and the need for a performance-based O&M budget, the Civil Works Management Tools for O&M Program was established in FY00. This research program has three key focuses: (1) development and fielding of simplified condition index (CI) inspection procedures; (2) developing a performance-based benefits analysis model/procedure for prioritization/ranking of the maintenance activities of the annual CW O&M budget; and (3) development of a "best practices" web site, containing fact sheets and points of contact for successfully demonstrated O&M cost saving technologies that have been proven in the field but are not yet widely used within the Corps of Engineers. The resulting products will make the Civil Works O&M Program more efficient by reducing subjectivity and introducing systematic objectivity into the overall budget planning and execution process. Concept planning, contractual engagements, and execution plans were made in FY00.

During FY01, fieldwork on simplification of CI methods for miter and tainter gates & valves began. Different approaches were tested with varying results. Initial test results indicated that time and cost savings of 50% to 75% may be realized while retaining significantly useful information of the original CI assessment process. Steps were taken to break down the CI inspection to smaller steps that could be performed independently and only as needed (called the multi-level approach). Further testing for calibration, validation, and field acceptance (selective training) was to be conducted in FY02. A consistent and reproducible procedure to be used for O&M budget prioritization of maintenance work packages was developed in both the Southwestern and Great Lakes & River Divisions. Corps wide testing was not attempted, but the results satisfied the local users in both Divisions. A benefit analysis for quantifying the impact of executing or deferring selected maintenance work packages was only loosely addressed in FY01. During a CW Management Tools workshop, a Summary Metric was proposed that would (in concept) rank order the importance of Civil Works projects in terms of their need for maintenance as functions of risk and economic impact or other parameters. Such a metric could be used locally or on Corps-wide levels. A standup version of the O&M best practices web site (called the O&M Handbook) was put on line http://www.cecer.army.mil/pl/omhandbook/. Over 140 O&M cost saving technologies with points of contact are available. In the summer of FY01 a decision was made to terminate the program, with minimal wrap up activities scheduled for FY02. During program wrap-up in FY02, fieldwork on simplifying CI's for tainter gates and finalizing contractual

agreements with the Canadian Hydro-Quebec power utility will be completed. The work to date on CI's for miter gates will be documented. Completed work on the prioritization algorithms shall be documented, as well as documentation for the conceptual Summary Metric. The stand up version of the O&M best practices web site will remain active at CERL as long as support costs can be funded. A technical report summarizing the entire program, with recommendations for continuing the work, will be published in FY02.

CUSTOMER SUPPORT

Increasingly, ERDC expertise and products developed in R&D programs are being requested to solve challenges in critical areas of concern.

Richard B. Russell Project. ERDC has provided assistance to the Savannah District during and after construction of Richard B. Russell (RBR) Dam and Lake beginning in 1983 and continuing to the present. During FY01, ERDC provided assistance on this project by addressing research questions on fish habitat, water quality, and performance and assessment of a new hypolimnetic oxygenation system in RBR Lake. The Savannah District constructed the original oxygenation system in 1984, which was replaced with a new design in FY01. Final assessment of its performance will occur during FY02. The ERDC maintains a remote facility near RBR Lake and on-site personnel and field capability continues to support these research activities. Benefits of the remote facility and close working relationship with the Savannah District are timely work completion and maximum flexibility for schedule and research adjustments to unexpected circumstances during the construction project. Although the construction project awaits completion of the final phase, ongoing studies continue to support the project and expand understanding of the three-reservoir complex on the Savannah River.

Chittenden Lock and Dam. Many fish passage problems at dams occur because the relationship between specific hydrodynamic features of the flow field and the response of fish to them is largely unknown. Many passage strategies at dams (e.g., Surface Bypass Collectors (a method of passing outmigrating juvenile salmon around Columbia River dams) or special operations of locks) depend upon the creation of local flow fields that attract fish to parts of the dam best able to effectively pass fish. Unfortunately, the hydraulic features that attract or repel outmigrating fish are still largely unknown, causing the performance of these passage strategies to be unpredictable. ERDC scientists have developed an analytical-statistical process that can be used to quantitatively describe the relationship between flow field features and behavioral response. The analytical-statistical process was used to develop a plausible, working explanation of the swim path selection behavior of juvenile salmon in the complex hydrodynamic environment of both natural rivers and dams. This relationship has been imported into a coupled Eulerian-Lagrangian modeling framework in which a "Numerical Fish Surrogate" (NFS) is used to explore, understand, and eventually simulate swim path selection of juvenile salmon. These concepts will be applied to Chittenden Lock and Dam and Lower Granite Dam and used to complete the development of the NFS software so that different fish passage alternatives can be evaluated in a simulation framework. The use of simulation will reduce reliance on the expensive and inefficient "build-and-test" paradigm presently employed in the basin.

Evaluation of Pallid Sturgeon in the Mississippi River. ERDC is studying life history, habitat preferences, and demography of the pallid sturgeon, a federally endangered species, in the Lower Mississippi River (LMR). Research is in support of the Mississippi Valley Division. Results will be used to evaluate potential impacts of Corps navigation and flood control projects on pallid sturgeon, develop conservation plans to identify long-term solutions to maintain integrity of sturgeon populations, and provide rationale to protect and restore important sturgeon habitats in the LMR. ERDC is also assisting the Regulatory Branches of the New Orleans, Vicksburg, and Memphis Districts in determining impacts of permitted sand and gravel operations in the LMR. In addition, ERDC is providing technical and field support to the St. Louis District to monitor pallid sturgeon in the Middle Mississippi River between the mouths of the Missouri and Ohio Rivers. This study was part of an interagency agreement that evolved from a jeopardy opinion by the U.S. Fish and Wildlife Service on the Upper Mississippi River/Illinois Waterway Navigation Improvement Project.

Insect Biological Control Work – Lower Rio Grande Valley. Over the last 4 to 5 years, increasing levels of two noxious aquatic plants, hydrilla and waterhyacinth, have seriously impacted the Lower Rio Grande Valley (LRGV). From 1998 through 2001, aquatic weed infestations were cited as the worst on record for both the Rio Grande and for most of the 28 LRGV irrigation districts. Direct impacts include restricted water delivery, inaccurate water accounting, breakdown of system maintenance, increased water loss, and impacts to natural diversity. Mechanical harvesting procedures have been employed but have proven to be prohibitively expensive for large sections of river. The use of the herbivorous grass carp is being

considered but its use may be restricted to the lower reaches of the river due to environmental concerns. Chemical applications have also been ruled out because of differences in registration procedures for the United States and Mexico. This has prompted the use of host-specific insect biological control agents, including two weevil species in the genus *Neochetina* for water-hyacinth management and two species of leaf mining flies in the genus *Hydrellia* for hydrilla control. After extensive surveys along the length of the river, several waterhyacinth and hydrilla insect release sites have been identified. During the summers of 2000 and 2001, over 90,000 weevils were released at four separate locations on the LRGV for waterhyacinth management, while over 300,000 immature flies were released at three different locations during the summer of 2001 for hydrilla control. Evaluation of insect establishment and impact is continuing.

Lake Okeechobee. Many areas of the Lake Okeechobee littoral zone that were historically dominated by a diverse community of native plants are now monocultures of the exotic plant torpedograss (Panicum repens). Torpedograss seriously degrades the quality of the habitat for fish and wildlife. Because the Comprehensive Everglades Restoration Plan (CERP) is expected to affect the hydroperiod in Lake Okeechobee, it is critical that the managing agency, the South Florida Water Management District (SFWMD), understands how this might affect the distribution and spread of torpedograss in the lake.

This research involved a study of the effects of water level changes on establishment and growth of torpedograss and its competitive interaction with the native spikerush (Eleocharis cellulosa). The results of the research are being used to predict the effects of water level changes, whether dictated by the CERP or natural, on the distribution of torpedograss in Lake Okeechobee. This information will allow managers to make informed decisions about using level manipulation for ecosystem restoration. The information is also being used to predict changes in the distribution of torpedograss so that management actions (herbicide treatment, fire, etc.) can be taken if needed to curtail torpedograss expansion into areas currently occupied by desirable native species. The research also provides insight into the basic biological and ecological mechanisms involved in plant invasions.

Ice Control Structures and Ice Forces on Structures. Support to the Buffalo District continued by providing technical assistance on the final design of the ice control structure (ICS) at Cazenovia Creek, West Seneca, NY. An ICS was designed for the Salmon River, CT, and recommendations on design parameters were forwarded to the Corps' New England District. The design was carried out with numerical modeling, using HEC-RAS with ice, to determine the extent of potential upstream flooding created by the structure during an ice jam event and the type and extent of bank protection required. The design of a sediment basin associated with the ICS is underway. This design requires an innovative approach to modeling sediment in ice-affected conditions, a knowledge gap that should be addressed in the near future. Numerous requests for technical assistance on estimating ice forces on structures, particularly bridges, were received. These included support to the Baltimore District in the case of the Upper Lisle Bridge, which utilized a probabilistic approach recently developed in the Cold Regions Engineering Program. Support to the Alaska DOT for the design of the proposed Buckland River Bridge was possible through application of the discrete element model (DEM) of ice transport. The DEM was modified to address conditions at the site and was instrumental in obtaining design parameters such as pier configuration and ice forces on piers.

Ice Management. ERDC assisted Pittsburgh, Detroit and Omaha Districts with ice problems. The performance of the St. Mary's River ice islands and ice booms in the Detroit District was analyzed through the use of web cameras and other data. A study of marina design in ice-affected waters was also performed for the Detroit District. Support for the Omaha District included studies of snow-water equivalent in the Oahe Reservoir watershed and a new, cost-effective method to estimate evaporation from large reservoirs. Technical assistance on mitigating the impacts of downstream ice jamming on operation of Oahe Dam on the Missouri River recommended maximum water releases as a function of existing downstream ice conditions to avoid ice jam flooding of the cities of Pierre and Fort Pierre, and also for the Omaha District. The Pittsburgh District required technical assistance in the form of a study of brash ice problems on the upper Ohio River, and recommendations for ice passage to minimize transit time losses due to ice. We also assisted with a study monitoring the performance of the submergible gates at Marseilles Dam in ice-affected conditions.

Web Cameras and Remote Monitoring Systems. At the request of various districts, a number of Web cameras have been installed to monitor ice conditions near locks and dams and other river structures or in remote areas with poor access. Images from the digital cameras are regularly transmitted to ERDC/CRREL where they are displayed on web pages so that ice and other conditions at critical sites can be monitored. For example, cameras installed to monitor the nesting sites of endangered terns and plovers nesting within a few

feet of the shore allow the dam operators to monitor wave action and water level at these nesting sites without disturbing the nesting grounds. Alarming stage gauges and ice motion detectors have been installed at freeze up and breakup jam locations. These low-cost, simple systems provide early warning of sudden stage fluctuations or ice cover break-up associated with ice jams.

Corps-wide Geospatial Data. A common set of meso scale (1:24,000) and 1:100,000 scale data of geospatial data was acquired, copied, and distributed to Corps districts, divisions, laboratories, and centers. These data provided a common set of base data serving as a framework for Corps projects and for Corps-wide applications. An evaluation of the value added by this data indicated a greater than 2.5 times return on investment.

Emergency Management. Emergency management support activities were significant in FY01. As part of the preparation for the 2001 hurricane season, assistance was provided in the development of a simulated storm for the Senior Leadership Seminar for top managers from the U.S. Army Corps of Engineers and FEMA. Disaster scenarios were also modeled for an earthquake and a hurricane for regional exercises. During the hurricane season, model runs were provided as frequently as every six hours to provide the best possible basis for estimating the scope of Corps disaster-related missions. CD-based guides were developed for earthquakes and hurricanes showing the range of products available for emergency managers and caveats necessary in using the products. A completely new GIS application was developed using the Internet to show the status of levees on the Upper Mississippi River during the flood season where the danger of levee overtopping was shown for all levees in the St. Louis, Rock Island, and St. Paul Districts. Assistance was provided to FEMA in instruction in the use of remote sensing and GIS for emergency management. Work continued on examining the accuracy of the present hurricane model used by FEMA and the Corps. Over 130 ice jams were reported during FY01, including a number requiring technical assistance. Significant jams in New England led to the creation of a New England Ice Jam web site that aided local, state, and Federal emergency managers. The site provided rapid mapping and access to historical data from the CRREL Ice Jam Database as well as information on current ice jams. Ice jam mitigation and training workshops were held in six states with support from North Atlantic Division and Seattle District.

Satellite and Airborne Remote Sensing. Numerous requests for assistance in commercial and developing sensors were received from the Corps districts. This includes sensors working in the visible and near infrared, infrared, and microwave portions of the spectrum. Information was provided about sensors meeting specific requirements, how to obtain imagery, and appropriate image processing techniques.

Model Linkage. To assist with the evaluation of the consequences of alternative land use and project alternatives, work continued on the development of a framework of protocols and standards to handle data flow between concurrently running models and RS/GIS tools in standardized ways. Linkage of models will be easier and less costly due to the selection of a limited number of standardized approaches. For the first time, it will be possible to link the models necessary to adequately analyze the complex natural and human-influenced landscape processes necessary for proposed and existing projects. Protocol requirements have been evaluated and the level II protocol has been developed and tested. Work is proceeding on Level III and IV protocols. This effort will result in savings through reduction in the number of models that will be developed and by eliminating the need for separate interfaces to be developed for each model.

Geographic Information Systems. Queries come to ERDC from districts concerning choice of GIS software, implementation issues, enterprise approaches, and development of applications. Center staff visited Northwestern Division and Portland District and a report on enterprise GIS written. Support was provided to the International Joint Commission for evolving studies on the Great Lakes.

CorpsView. CorpsView (CV) is a water control data integration and visualization tool developed to provide access to and display of water control time series data and model results from within a spatially referenced map interface. CV was upgraded for the Corps Water Control Management System (CV-CWMS) to be compatible with CWMS v. 3.0, which is currently being deployed across the Corps and was also enhanced to allow it to work in a Windows and UNIX environment. CV-CWMS was been distributed to seven districts/divisions. CV was also extended to provide integration with the water quality database DASLER. CV-DASLER allows visualization, querying, and analysis of water quality data from either a DASLER Oracle or DASLER Access database. The CV-DASLER interface is currently installed and being tested at Huntington, Nashville, and Baltimore Districts.

Formerly Used Defense Sites (FUDS). In FY01, the ERDC continued previous work with the Formerly

Used Defense Sites (FUDS) Program to enhance the World-Wide-Web-accessible GIS interface linked with the FUDS Management Information System (FUDSMIS). FUDSMIS allows program and project managers to track and report all FUDS property, project, and phase data required for program planning, budgeting, and execution. The integration of GIS technology with FUDSMIS has provided users with the ability to access and manage program data quickly and easily by querying geographic features. The FUDSMIS GIS is built using the latest open source software and state-of-the-art technology. FUDS program and project managers can view property locations and program information in relation to detailed GIS base data, including Census Bureau TIGER data and the Department of the Interior political boundary data. They can search for FUDS properties by state, county, congressional district, zip code, and by property name, and then link directly back into FUDSMIS for more detailed program information. Users can also create customized presentation materials directly from the interface. ERDC has also developed a FUDS Public Information System to facilitate the exchange of information between U.S. Army Corps of Engineers divisions and districts and regulatory agencies, local and tribal governments, and the general public. This information system publishes the FUDS data in the Annual Report to Congress in an easy to use World-Wide-Web-accessible GIS application. It is fully functional and is awaiting implementation.

ENGLink Geospatial. As part of the ERDC support to the geospatial components of ENGLink Interactive, the Corps' command and control software for emergency management, a software process was developed to automate the creation of seamless nationwide base data layers from the Census Bureau TIGER 2000 ASCII county line files. This data development effort was designed to facilitate rapid incorporation of TIGER updates into ENGLink Interactive Viewers and Tools. The resulting nation-wide TIGER shapefiles may be loaded directly into any commercial GIS system that supports shapefiles. There are no licensing issues with the data and layers may be distributed to customers as required. The initial TIGER base data layers are optimized for performance and have been loaded successfully into an ESRI Spatial Database Engine (SDE) running on top of an ORACLE relational database.

Civil and Military Emergency Protection. In support of the efforts of the Partnership for Peace Information Management System, ERDC has worked with geospatial data sets provided by Romania, Hungary, the Ukraine, and Slovakia and developed a GIS viewer with this shared data to be used for the management of natural disasters. ERDC also has provided remote sensing and GIS advice in the uses of these technologies.

Environmental Support. ERDC provides watershed ecosystem spatial analysis support that focuses on environmental issues with and emphasis on ecology. The efforts of the biologists, geologists, and computer specialists in the group are focused on work within several R&D programs and support to numerous districts. In the area of geospatial software development these efforts involve designing web based software applications to support Corps environmental and regulatory programs. These same applications are being expanded to provide watershed GIS/RS support using custom designed software for large environmental studies where geospatial analysis and display are required. In the life science application of these technologies, ERDC is actively involved in research to design and support wetland delineation methods in the arid southwestern United States. To support the Corps in wetland research, basic research to analyze duration and frequency of ponded water on western playas, research into developing geospatial techniques to assist with the identification of hydrological indicators useful for delineation of wetlands and floodplains, and investigation of more refined methods of vegetation identification using RS methods have been accomplished.

GPS Tides. ERDC has developed a Marine Transportation System (MTS) navigation system using GPS that can measure under keel clearance on the bridge of a ship and record the ship's three-dimensional position every second to a computer much like the Federal Aviation Agency's "Black Box". The system may become aids to navigation as the system can be used to slow the vessel as the keel nears the clearance tolerance to the bottom of the navigation channel (e.g., a LNG tanker would have a wider tolerance than a collier would). The system is successfully being used for dredging and hydrographic surveying to remove tide and vessel squat from soundings in four USACE districts. The patented system has potential to generate funds for USACE lost on outbound transits from the Harbor Tax 1998 Amendment, as this system is a needed service, not a tax. Maritime underwriters will also benefit from GPS Tides service. The system can also be used in inland waterways. The GPS Tides Project can treat flood hydrographs and stream gauge level above the low water reference plane the same way it measures tides in the ocean.

Paint Technology Center. The ERDC Paint Technology Center provides Corps districts with a center of expertise for all paint related issues. The

Center conducts research on high performance coatings for hydraulic structures including surface preparation, application, and performance. Services also include failure analysis, QA paint testing, and both in-house and on-site consultation services and training. Corps districts have been provided guidance on the paint selection for dam and bridge restoration projects as well as guidance in paint specification and inspection. The Paint Technology Center's paint testing capability has helped over 20 Corps district offices avoid construction delays. A test report is provided for each sample, which provides testing results and final recommendation for the approval or refusal of the sample. In a typical year over 200 paint/coating samples are tested and over 600 telephone inquires for paint information are answered.

Corrosion Design Studies. ERDC is assisting New England District in the design of a corrosion protection system, which includes coating and cathodic protection (CP) of a sheet pile structure for the contaminated disposal facility located in New Bedford Harbor. ERDC recommended that the sheet pile be coated and cathodically protected with a replaceable sacrificial aluminum anode system. The CP is a unique design that incorporates a replaceable anode system every 20 years. The total cost of the CP system is estimated at $600K. ERDC also participated in a corrosion protection design project for Wyckoff/Eagle Harbor and provided assistance on design options for corrosion protection of a sheet pile retainment wall as part of a remediation effort for a Superfund site on Bainbridge Island.

Energy Supply Optimization for Innovative Combined Sewer Overflow (CSO) Control. Chicago District is responsible for the construction and development of a 20,000 acre-feet reservoir as part of a massive multi-billion dollar CSO and off-line flood control program. Chicago District asked ERDC to model/demonstrate/evaluate the phenomena that are expected to occur. A large-scale physical model was developed using an available excess digester at a local wastewater treatment plant and retrofitting it with a battery of computer controls and various probes. Experimentation will determine the effectiveness of a variety of mixing systems and oxygen transfer mechanisms on combined sanitary and storm wastewater to evaluate sediment mixing and changes in water quality. This research will enable the appropriate design and equipment selection to meet the project requirements in the most cost-effective manner. An experimental plan was developed in FY01 and will be executed during FY02.

Ohio River Navigation studies. ERDC has conducted physical model studies, including lock filling and emptying using the Ohio River Mainstem Study (ORMSS) model, to support Ohio River navigation.

Houston Ship Channel and Matagorda Bay, Texas. ERDC has conducted physical, numerical, and analytical studies, in addition to ship simulations and field investigations, of inlets, sedimentation, salinity, and tidal hydraulics to support navigation along the Texas Gulf coast in the Houston Ship Channel, Matagorda Bay, and Corpus Christi.

INSTITUTE FOR WATER RESOURCES

The Institute for Water Resources (IWR) is a field operating activity under the staff supervision of the Deputy Commander for Civil Works, Headquarters, U.S. Army Corps of Engineers (HQUSACE). The Institute consists of the Hydrologic Engineering Center, the Navigation Data Center, the Decision Methodologies Division, the Navigation and Water Resources Application Division, The Planning and Policy Studies Division, The Programs Analysis Division, and support elements. It is located at the Humphreys Engineer Center, Alexandria, Virginia, with satellite elements at other locations, including the Hydrologic Engineering Center in Davis, California; and the Waterborne Commerce Statistics Center, part of the Navigation Data Center, in New Orleans, Louisiana.

The accomplishments of IWR during FY01 are listed by division.

HYDROLOGIC ENGINEERING CENTER (HEC)

FY 2001 was a transition year for the Hydrologic Engineering Center. This was our first full year as an organization within the 'new' Institute for Water Resources, continuation of the staff retirement trend resulted in turning over half of the management staff and about half of the senior technical staff, and we began transitioning from the intense six-year development and integration effort for the Corps Water Management System to the eighteen-month deployment period. We continued significant progress on our NexGen software research and development project, and started (and in some cases, completed) several significant technical assistance projects. All in all, a busy, productive, and interesting year.

The project to modernize the Water Control Data System (WCDS) software began in FY 1997. Because the modernized system is much more than a data system, it was renamed to the Corps Water Management System (CWMS). The CWMS is the decision support Automated Information Systems (AIS) that supports the Corps water management mission. It embodies data acquisition, validation, transformation and management; forecasting, simulation and decision support analysis; and information dissemination. Modernizing and deploying the corporate software for CWMS is a six-year, $7.6 million centrally PRIP funded, Corps AIS improvement project managed under the Corps Life Cycle Management of Information Systems (LCMIS) process. The management structure and design teams form a unique arrangement for providing oversight and field participation in the enterprise-wide development and integration project. The significant accomplishments in FY 2001 were completing the initial development phase and securing a favorable LCMIS Milestone Decision III (approval to deploy). Deployment of CWMS began in July 2001 and will continue through December 2002. We are proud of the fact that the project is on schedule and within budget. Project documents are available on the project Internet Web site: (http://cw71.cw-wc.usace.army.mil/cwcinfo/cwc.html).

The NexGen software research and development project continues to release products for Corps field offices. HEC-HMS (Version 2. 1) was released. This version of the Corps standard watershed model includes a moisture accounting loss algorithm and several improved display and interface features. Work is nearing completion on the next version that will add dam safety and planning analysis capabilities, and a bit later, replaces the user interface with newly designed and exciting functionality. The companion GIS utility package (HEC-GeoHMS) has been updated and new features added. This utility provides substantial capability to effectively use national terrain data sets to rapidly develop HEC-HMS models. HEC-RAS (Version 3.0), the initial unsteady flow version, was released this past year. The companion GIS utility package (HEC-GeoRAS) has undergone significant improvement, including now having the capability to extract roughness coefficients from terrain and land cover spatial coverages. The major flood damage and risk analysis software package, HEC-FDA, continues to be improved. A significant new NexGen software package is included in CWMS Version 1.0; a new simulation/real-time reservoir operations model. This program is the planned eventual successor to HEC-5. At fiscal year end, the program was undergoing testing prior to public release as a stand-alone program. Maiden release will occur early in FY 2002.

We rebounded to a recent high of ten PROSPECT courses. The courses covered several hydrologic engineering and planning analysis topics including

HEC-RAS, HEC-HMS, GIS applications, watershed/river and wetlands restoration courses, and advanced courses in unsteady flow and HEC-HMS applications. Attendance averaged about 25 students per course. Several on-site workshops were also held mostly focused on HEC software such as HEC-RAS, HEC-HMS, and HEC-FDA. Several pre-deployment working sessions for CWMS were held as well, with attendance for each limited to a division/regional office.

Reimbursable project work was undertaken for 22 Corps field offices as well as HQUSACE, ERDC/CHL, the Federal Emergency Management Agency, and the National Institute for Building Sciences. Projects include watershed and reservoir system modeling, water quality, risk analysis, river hydraulics, wetlands hydrology, water control management, regional statistical analysis, flood damage analysis, GIS applications in hydrology and hydraulics, and groundwater modeling. In the upper Mississippi, HEC is managing a project to update the model geometry for the Mississippi Basin Model System (MBMS) to reflect more recent mapping and to develop an inundation-mapping component based on the new mapping. The significant work includes cutting the new river section geometry, integrating these new digital map-based geometry sections into the UNET models, re-calibrating the models, and preparing final reports. Work is expected to be completed early in FY 2002. The reimbursable project to assist in modeling the Sacramento and San Joaquin river basins for flood control operations was completed and a final draft report delivered to the Sacramento District. We also undertook to develop a GIS-based package coined 'Ecosystem Functions Model' that is intended to assist in regional-scale environmental evaluation of alternatives. This work is part of a comprehensive study by the Sacramento District to review the flood damage reduction system for the Central Valley of California. The models (separate models for the Sacramento Valley and San Joaquin Valley) are: HEC-5 for flood control operations (now being converted to HEC-ResSim models); HEC-ResFloodOpt, system flood control operation optimization; HEC-FIA, flood economic/damage impact analysis model, and HEC-HMS (flood runoff model). Data compilation, and some of the model development will later serve as the base for modernized CWMS implementation for these areas. We continued an interesting project that is developing a flood forecast system for an area of the Susquehanna basin that has as its final outputs, forecast flood inundation maps with associated flood damage, a first. Work will continue through this year. A unique and complex unsteady HEC-RAS model was developed for the Truckee Meadows, NV area, demonstrating its utility for such applications. The total reimbursable project program was about $1.5 million with individual projects ranging from a few thousand dollars to more than half a million dollars.

The HEC program for FY 2002 will continue FY 2001 efforts as reflected at the end of the year. We will continue fielding new versions of the NexGen software packages HEC-RAS, HEC-HMS, HEC-FDA, the new HEC-ResSim, and companion GIS utility software. Version 1.0 of CWMS will be deployed in about 3/4ths of the Corps divisions/regions, with completion expected early in FY 2003. PROSPECT training will increase to thirteen courses (a new recent high) and the number of field workshops will likely continue at about the same rate. Research and Development funding is expected to continue to decline - not a good trend, software maintenance and support stay the same, CWMS modernization funding will decline by about one-fourth, and reimbursable technical assistance and special projects will likely level off at about $1.5 million. On balance, the result is expected to be a lively and interesting program with a solid funding base for FY 2002. We have become a more integral component the Institute for Water Resources, with a number of cooperative activities with other IWR elements underway. We expect this trend to continue, with increased utility of HEC and other IWR elements to our customers.

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DECISION METHODOLOGIES DIVISION

The mission of the Decision Methodologies Division is to develop tools that help people make decisions about how to invest in and manage the Nation's water resources. We carry out that mission through our work in research, technical assistance, and training.

Our research work covers Integrated Technologies for Decision-Making which consists of two Research Programs: Investment and Management Decision-Making and Risk Analysis for Water Resources Investments. In addition, we develop flood damage data collection, and automated budgeting procedures. The purpose of the Investment and Management Decision-Making Research Program is to develop tools and approaches that assist in the evaluation, comparison and selection of alternative water resource plans. In FY01our research work units under this program were: Watershed Studies Decision Making Framework; Automated Watershed Planning Tools; Planning Process and Evaluation Procedures; Tradeoff Analysis and Collaborative Decision-Making; Applications of IWR-PLAN (cost effectiveness and incremental cost analyses) to Corps Business Programs/Mission Areas; and Evaluation Frameworks for Dam Removal.

The purpose of the Risk Analysis for Water Resources Investments Research Program is to develop tools and approaches to determining how much is enough with regard to how effective and how safe a project must be relative to it's cost. In FY01 the Risk program work units were: Risk-Based Evaluation & Decision-Making for Environmental Investments; Quantifying Risk and Uncertainty in Environmental Models (EL); Risk & Uncertainty of Hydrologic Engineering Analysis for Riverine Environmental Restoration Studies (HEC); Quantifying Key Sources of Risk & Uncertainty in Environmental Restoration - Production and Cost for Cost Effectiveness and Incremental Cost Analysis; Risk-Based Evaluation and Decision Making Framework for Deep Draft Navigation; Identify & Quantify Key Sources of Risk & Uncertainty in Engineering Variables in Deep Draft Navigation (CHL); Quantifying Key Sources of Risk & Uncertainty in Planning Variables in Deep Draft Navigation; and Residual Risk of Flood Damage Reduction Projects (HEC). The decision support tools developed through these research programs serve as standards for plan formulation and evaluation throughout the Corps.

The Division manages the collection, management and analysis of the Corps' Flood Damage Data Collection (FDDC) Program. Flood damage data from recent events have been collected and are being used to develop more accurate assessments of residential, business, and public flood damages. Using these data, the division developed and HQUSACE distributed the first Corps-wide depth-damage relationships. The division has used this program to develop and verify a computer application for collecting, organizing, and assessing floodplain inventory data. A working version of the Corps of Engineers Inventory Tool (CEFIT) is expected to be released in Fiscal Year 2002. The FDCC program will reduce the time and cost for developing flood damage reduction projects.

We provide technical support for the Automated Budget System (ABS) used to develop, analyze and display the Corps' O&M program each year. All Corps offices involved with the operation and maintenance of civil works projects use ABS to create work packages, rank their importance and analyze and display the impacts of different program scenarios. We developed a new analytical tool, ABS_Cube, that summarizes ABS data quickly and allows "drill-down" to the detail level on work packages. This tool will be deployed throughout the Corps during the next fiscal year.

In FY 01 we provided technical assistance to Corps districts on a variety of water resource problems, including assistance to: Jacksonville District on a storm damage model; Wilmington District on a shore protection model; Galveston District for navigation improvements to the Gulf Inter-coastal Waterway, the Corpus Christi Ship Channel, and on the Green's Bayou flood damage reduction relocation study; Mobile District on a study of improvements to the Black Warrior-Tombigbee Waterway; New Orleans District for a study of recreation in the Lower Atchafalaya River; and assistance in conducting cost effectiveness and incremental cost analyses, as well as plan formulation and evaluation, to New York, Baltimore, Sacramento and Norfolk Districts. The Norfolk District's Elizabeth River Environmental Restoration Study, for which we provided plan formulation and

evaluation assistance, received the Corps' Planning Achievement Award for the Year 2000.

Finally, in FY 01 we presented or supported the following training courses, seminars and workshops:

PROSPECT COURSES	Dates	Location
Conflict Management and Dispute Resolution	23-27 April 2001 4-8 June 2001	Jacksonville, FL Denver, CO
Economic Analysis - WRP	5-9 March 2001	Springfield, VA
Environmental Restoration, Planning and Evaluation	7-11 May 2001 18-22 June 2001	Springfield, VA Seattle, WA
Public Involvement-Communications	23-27 July 2001	Huntsville, AL
Regulatory I - New Regulators	23 - 27 April 2001 25 - 29 June 2001 19 - 23 March 2001	Jacksonville, FL Denver, CO (Inst. Meet) Norfolk, VA
Regulatory IIA - Procedural Issues	23 - 27 October 2000 23 - 27 July 2001	Huntsville, AL Denver, CO
Regulatory IIB - Decision Making	29 Jan. - 2 Feb. 2001 11 - 15 June 2001	Huntsville, AL Norfolk, VA
Risk Analysis – WRP	21-25 May 2001	Davis, CA
SEMINARS		
Regulatory Executive Seminar	6-8 March 2001	Springfield, VA
WORKSHOPS		**SPONSOR**
Cost Effectiveness/Incremental Cost Analysis and Ecosystem Restoration Planning	13-16 Feb. 2001 10-11 Jan. 2001 22-24 Aug. 2001 22-26 Jan. 2001	British Commonwealth of Nations, Trinidad North Atlantic Division, Baltimore Southwestern Division, Ft. Worth Sacramento District

PLANNING, AND POLICY STUDIES DIVISION

The Planning and Policy Studies Division carries out its mission in support of the Director of Civil Works by conducting policy analysis, planning and studies of national and regional scope.

Since 1976, the program has contributed to the development of numerous policies and programmatic initiatives within the Civil Works Directorate as well as several important national and regional studies.

The program continues to serve the Corps by assessing and evaluating changing national and regional water resources issues; natural resources uses and management; and related public works infrastructure management needs as they affect Corps Civil Works missions, policies, practices, legislative mandates, and executive directives. During FY01 the division conducted 13 policy studies in direct support of the HQ Policy Division. In addition to the policy studies program, special studies of national and regional scope were undertaken that built on the policy directives and research tools, which were developed at IWR.

Among the noteworthy national and regional special studies undertaken in FY01 were:

- Nationwide Permit Programmatic EIS
- Supplemental Regulatory Cost Analysis of Nationwide Permit 26 Changes
- Florida Wetlands Mitigation Banking Evaluation for Jacksonville District
- Development of Corps Environmental Database

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- Ohio River Basin: Utility of Forecasts for Water Management
- Upper Mississippi River Flow Frequency Study: Climate Change and Variability
- River Basin Pre-project Conditions
- Review and Analysis of In Lieu Fee Mitigation in the CWA Section 404 Permit Program
- Examination of Consistency within the Northwest Division Regulatory Program
- Florida Keys Carrying Capacity Study
- King William Reservoir Water Needs Study
- International Joint Commission Support for Lake Ontario Study
- Distribution of Shore Protection Benefits (for OMB)

Among the specific policy studies conducted during FY01, the following subjects and issues were included to support the development of legislation, policies, directives and guidelines for various activities within the Corps Civil Works (CW) program:

- Formalizing the WRDA Formulation Process
- Improving Environmental Benefits Evaluation
- Regional Programs for Managing Ecosystem Restoration, white paper
- Policy Options, Ability to Pay, WRDA 2000
- Planning & Designing Sustainable Projects
- Environmental Strategy
- Consolidation of Policy Regulations
- Advance Measures (PL84-99)
- Integrated Technical Assistance for Flood Damage Reduction Policy Study
- Tribal Partnership Program Study
- Projected and Actual Traffic at U.S. Harbor Projects
- Regional Sediment Management Policy Issues
- CW Flood Damage Reduction Brochure

During the year, permanent staff personnel were joined by visiting scholars from leading universities in the country. Visiting scholars work full time in the division offices or visit from time to time during their appointments. They contribute to a large number of policy and special studies and upon their return to teaching, their academic programs are enriched by exposure to information they learn while working for the Corps. Overall, the division staff and visiting scholars have a significant influence on the state of current knowledge, from papers presented at various workshops and conferences, as well as publications in peer-reviewed journals.

NAVIGATION AND WATER RESOURCES APPLICATIONS DIVISION

The Navigation and Water Resources Applications Division provides support for HQUSACE and field divisions and districts for project-specific and system studies of navigation improvements and other water resources issues. In this regard, it also performs recurring national-level analyses such as the update of vessel operating costs for inland and deep draft waterways, development of coastal harbor and inland segment commodity, traffic and fleet forecasts, and analysis of the recovery of navigation costs. The division also provides program management support for the Inland Waterways Users Board (IWUB), manages the U.S. Section of the International Navigation Association (PIANC), supports overall Corps coordination with the Transportation Research Board (TRB) of the National Academy of Sciences, and performs national and special studies as directed by HQUSACE.

Major activities include the following projects and studies:

Continuing Support Activities. The foundation for evaluation of navigation projects, both inland waterway and deep draft harbors, is the comparison of transportation costs with and without proposed improvements. As part of the USACE Transportation Systems Program, the division maintains and verifies current data on ocean and inland water vessel operating costs, the dimensions of these vessels, the distribution of ocean vessel sizes in the world fleet, and the configuration of barge tows on inland waterways. This information is transmitted by HQUSACE to all Corps districts as CW planning guidance.

Coordination of Navigation Studies. The IWUB, created by the Water Resources Development Act of 1986, is charged with advising Congress on priorities for improving inland waterways. To provide technical information desired by the IWUB and the Army, the division performs ongoing analysis of construction and funding schedules for navigation projects on the fuel-

taxed inland waterways system. This analysis incorporates the USACE and IWUB priority evaluations of inland navigation projects in accordance with the budget constraints imposed by the Trust Fund.

Ongoing Studies:

- National Dredging Needs Study (Section 402 of the WRDA of 1992)
- Transportation Systems Program, which includes:
  - Update and distribution to field of transportation cost models for barges, rail and trucks
  - Update of both ocean and inland vessel operating and replacement costs
  - Development of a software package for customizing deep draft vessel operating costs
  - Development of national and regional commodity and fleet forecasts for use in planning studies
  - Development of Level of Service Measures for Navigation Projects
  - Analysis of Inland Navigation Benefit Categories, including Quality of Life and Regional Economic Benefits
- Implementation Support on Components of the Operations and Maintenance Program Plan of Improvement
- Program Management Support on Activities of the IWUB
- Analysis of Inland Navigation Project Schedules and Financial Status of Inland Waterways Trust Fund
- Analysis of USACE Dredging Quantities and Costs
- Scenario Development for the Upper Mississippi River and Illinois Waterway Navigation Study
- Development of Risk-Based Methods to Apply to the Evaluation of Deep Draft Navigation Projects
- Analysis of the recovery of waterway and harbor navigation costs
- Assist in the development of the Navigation Information Sharing website for inland waterway commodity movements by volume and value between states
- Hurricane Preparedness and Evacuation Strategies for Coastal and Island Communities
- Development of a brochure on the value to the nation of deep draft navigation

Recent Products:

- Historical Economic Perspective of Ports, National Dredging Needs Study
- Background and Information Papers, National Dredging Needs Study
- Evaluation of Economic Benefits of Cruise Ships
- Annual Report to Congress on the Status of the Harbor Maintenance Trust Fund for FY99
- Financing Practices for International Dredging of Port and Harbors
- Information Brochure: Inland Navigation Value to the Nation
- Projected and Actual Traffic on Inland Waterways
- The Role and Value of Tributary Inland Waterways
- Study of Data Need for Low Commercial Use Harbors
- Economic Evaluation of North Carolina Beaches after Hurricane Fran

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PROGRAM ANALYSIS DIVISION

The Program Analysis Division develops and carries out assigned program analysis and evaluation studies to assist HQUSACE in Civil Works program development, defense and execution. The Division also provides analytical support to HQUSACE and Corps field offices to describe, evaluate and improve the performance of the Civil Works program.

Major activities undertaken in FY 01 include the following:

- **Civil Works Strategic Plan**. The division managed the formulation and development of the revised draft of the Civil Works strategic plan. This revised draft plan incorporated the results of public input from sixteen "Listening Sessions" conducted around the country in 2000. In addition to the draft strategic plan, a National Report, brochures and fact sheets focused on water resources challenges identified during the Listening Session process were also completed. These materials have been widely distributed during this year.

- **Civil Works Planners Training and Development**. Program Analysis Division provided primary analytic and contract management support to this high priority Civil Works effort to improve planner capability. During FY 01 the initial task force effort, begun in FY 00 and co-chaired by Program Analysis Division staff, came to a conclusion, and a task force report presenting fourteen recommendations was produced. Task force recommendations were endorsed and an ambitious planning improvement program was approved and funded. The program includes an eight-course planner core curriculum, an expert planner program, a planners resource web site, and development of a masters degree program in water resources planning and management in partnership with the Universities Council on Water Resources. Program Analysis Division had direct responsibility for the development of two planner core curriculum courses - a basic plan formulation course, and a course on consensus building as well as for development of the planners resource web site. In addition, division staff worked with an academic advisory panel from the Universities Council on Water Resources to develop a concept for a masters degree program in water resources planning and management.

- **Value to the Nation Initiative**. The purpose of this initiative is to call attention to the value the Nation receives from its investment in the Civil Works program. Products from this initiative include a web site and a series of brochures focused on Corps project outputs. In FY 01 a proto-type web site providing users with information about Corps projects and their contributions to the Nation's economic, social and environmental well-being was completed. The focus for the proto-type site was on recreation investments. In addition, a Value to the Nation brochure describing the value created by hydropower investments was completed. Some 12,000 copies of the brochure were made available for distribution at Corps visitor centers and hydropower sites.

- **Corps Capital Stock Update**. The value of USACE civil works capital stock is an important indicator of investment in water resources infrastructure, and is integral to CW strategic plan

- objectives to call attention to the importance of infrastructure investment. The value of Corps capital stock has not been consistently updated since the completion of the Federal Infrastructure Strategy program in 1995 (which used USACE budget data through 1992). Program Analysis Division staff initiated work to update this estimate, and also to lay out a framework for using this information to update estimates of return on investment provided by Civil Works infrastructure.

THE NAVIGATION DATA CENTER (NDC)

The Navigation Data Center's (NDC) primary mission is to collect and supply navigation data and information for the purpose of enhancing productivity of both the U.S. Army Corps of Engineers and the nation by providing quality and timely information for water transportation-related analysis and decision making. NDC directly supports the USACE navigation, regulatory, emergency and readiness functions as well as those of other Federal, state and local agencies with roles or interests in water transportation. The Office of Management and Budget has designated the USACE, acting through NDC, as the Federal Central Collection Agency for waterborne commerce and vessel activities and waterway

infrastructure data and statistics. As the Federal central source, NDC continued its intra- and interagency coordination during FY01. To insure Corps interoperability and minimize data entry. NDC continued the program to link NDC data as well as data from other O&M business areas with the Corps financial data system to produce quality, timely, performance measures. Such as cost per ton-mile of commerce moved. This project, called the Operation and Maintenance Business Information Link (OMBIL), assists the Corps transition to business-oriented management. Benefits realized in FY01were the abilities to link and layer navigation information to gain a more comprehensive understanding of navigation issues. NDC continues to support data users by supplying information in both standard and custom products. NDC maximizes the use of electronic distribution of information via the internet, the Corps intranet and by combining public data and reports on one annual CD-ROM.

Waterborne Commerce and Vessel Statistics

NDC continued to provide annual preliminary and final U.S foreign and domestic vessel, vessel activity and commercial traffic products, plus monthly tonnage estimates, on the internet in order to furnish both the government and the public more accessible and more timely information concerning waterborne commerce statistics. NDC also produced a new performance measure for inland waterways: system ton-miles. System ton-miles measure the total contribution that a specific waterway makes to the whole waterway system. It is computed for each waterway by summing the products of the tonnage carried times the total distance transported on the inland waterway system for each commercial cargo movement on that specific waterway. NDC performed a data quality comparison between vessel manifest-based import/export cargo data versus trade-based import/export data. As a result, NDC used for the first time the manifest-based data as the primary source for our calendar year 2000 official statistics because of its better geographic accuracy, completeness and because it includes container information that is unavailable in the trade dataset. The trade-based dataset that NDC has supplied in the past is continuing to be produced in partnership with the Maritime Administration; so that data users will still have access to the monthly products as well as cargo value and commodity specificity strengths of this dataset.

Ports and Waterways Infrastructure

This information supports the Corps Federal Central Collection Agency responsibility for documenting the nation's commercial port infrastructure served by Federal channels. In FY 2001, five of the 56 volume Ports Series Reports were completed, distributed, and available for sale. Port Series (PS) Report No. 22 - The Ports of Port Arthur, Beaumont, and Orange, TX; PS No. 30 - The Ports of San Francisco, Redwood City, and Humboldt Bay, CA; PS No.31 The Ports of Oakland, Alameda, Richmond, and Ports on Carquinez Strait, CA.; PS No. 41 -The Ports of Buffalo, Rochester, Oswego, and Ogdensburg, NY; and PS No. 42 - U.S. Ports on Lake Erie (Erie, PA; and Conneaut, Ashtabula, Fairport Harbor, Lorain, Huron, and Sandusky, OH). In addition to the completed reports, field surveys were conducted and data entered into the Ports and Waterways Information Management System (PWIMS) for the following: PS No.1 - The Ports of Portland and Searsport, ME and Portsmouth, NH; PS No. 20 - The Port of New Orleans, LA; PS No. 33 - Oregon Coast; PS No. 36 The Port of Seattle, WA; and the Baton Rouge section of PS No. 21 - The Ports of Baton Rouge and Lake Charles, LA. In addition to the printed reports, data for the 9,280 individual docks are available in summary form and as data files on the Internet. These data are updated as each port area is re-surveyed and verified as current.

Lock Performance and Characteristics

The lock performance database continued to be enhanced via Web-Based Technology providing the Corps access to individual local lock real-time data. The beginning of a national data warehouse was begun which will provide all Corps users direct access to current and historical data. Lock characteristics, the physical descriptions of all the Corps owned/operated locks, are also available on the web to all users. These lock databases are feeder systems to the Operations and Maintenance Business Information Link (OMBIL) decision support system.

Dredging Statistics

This web-based ORACLE database is successful in supplying information on all Corps performed and contracted dredging to the Corps, industry and private users. Data entry and report generation is accomplished via the Corps Intranet and enables all Corps members access to the information in the central system. The database continues to meet user needs with biweekly updates of Corps and contract dredging information made available on the public internet web site. In addition to the standard reports and summaries, custom queries and reports are quickly generated to meet user requests. The extensive use of the data by the Corps and industry has resulted in improved bidding

competition and a more efficient utilization of dredging equipment. The dredging database is a feeder system to the Operations and Maintenance Business Information Link (OMBIL) decision support system.

INTERNATIONAL NAVIGATION ASSOCIATION (PIANC)

The International Navigation Congresses (PIANC) is an organization consisting of approximately 40 national members. From its headquarters in Brussels, Belgium, it acts as a clearinghouse of technology and experiences relating to ocean and inland navigation improvements which are exchanged among engineers, scientists, port operators, and marina and vessel owners, to name a few. Its objective, broadly stated, is to promote the worldwide progress of inland and maritime navigation through the exchange of technical information on port and waterway development. The objective of the Association is met by holding International Congresses and by publishing technical bulletins and special reports. Special reports are published describing the results of the work of international research teams, or working groups, composed of those national members interested in the particular subject under study. Examples include methods of treatment and disposal of dredged material, flexible revetments in the marine environment, an international survey of dry dock facilities and their characteristics, the wildlife habitat and port management, standards for recreation navigation waterways, and various other topics relating to port and waterway development. The organization also serves as an excellent source of identifying individual and corporate expertise throughout the world on PIANC-related subjects. Personal interchange of ideas and information also is promulgated by members attending the International Congresses held once every four years, and technical working group meetings held several times each year.

The business affairs of the Association are managed by the Permanent International Commission (PIC), which in 2000 was renamed the Annual General Assembly (AGA). It is composed of delegates who represent each member government. The number of delegates is determined by the size of the national membership, but may not exceed 11 per country.

The United States (U.S.), which has been a member of PIANC since 1902, provides an annual appropriation for the support and maintenance of the organization. This includes an annual subvention to PIANC International and payment of a portion of the travel expenses of officially appointed national delegates (Commissioners) of the United States to meetings of the AGA and Congresses. Total annual appropriation for the U.S. Section, PIANC is currently $45,000, including the annual subvention of approximately $11,000.

The U.S. Section is administered by law, under the auspices of the Department of the Army (Corps of Engineers). It is located in the Institute for Water Resources (IWR), Casey Building, Humphreys Engineer Center. The U.S. Section is composed of both individual and corporate members who pay membership dues. Membership of the U.S. Section on September 30, 2001, totaled 337, consisting of 270 individual members, 66 corporate members and 1 student member.

United States National Commission

The United States National Commission constitutes the governing body of the National Section. At the beginning of FY01 the ex-officio officers of the U.S. National Commission were: Chairman, (Dr. Joseph W. Westphal, Assistant Secretary of the Army (CW)); President, (MG Hans A. Van Winkle, Director of Civil Works); and Secretary, (Mr. Thomas M. Ballentine) an employee of IWR.

At the beginning of FY01 U. S. National Commissioners were: Mr. Robert D. Nichol, President, Moffatt and Nichol Engineers; Mr. Kurt J. Nagle, President, American Association of Port Authorities; Mr. Charles C. Calhoun, Jr., Vice President representing the Central Region of the U. S. Section and consultant; Dr. Anatoly Hochstein, National Ports and Waterways Institute, University of New Orleans; Mr. Joseph H. Pyne, President, Kirby Corporation; Ms. Doris J. Bautch, Chief, Division of Ports, Maritime Administration, U.S. Department of Transportation; Mr. Walter D. Ritchie, Vice President representing the Western Region of the U. S. Section and Vice President, KPFF, Inc.; and Mr. Thomas H. Wakeman, III, Vice President representing the Eastern Region of the U. S. Section and General Manager, Waterways Development Division, Port Commerce Department, Port Authority of New York and New Jersey.

In March 2001 Dr. Joseph W. Westphal, was re-assigned becoming the Acting Secretary of the Army. Ms. Claudia L. Tornblom became the Acting Assistant Secretary of the Army (Civil Works) and the Chairman of the U. S. Section, PIANC. In July 2001 Brigadier General Robert H. Griffin (P) was named Director of Civil Works and became President, U. S. Section of PIANC. In December 2001 Dr. Anatoly Hochstein retired after having served two four-year terms on the Commission. Dr. Robert E. Randall, Professor of Ocean and Civil Engineering, Texas A&M University was nominated to the Commission.

The Treasurer is Captain James R. Carman, (retired) who formerly served as Chief, Division of Port and Intermodal Planning, Office of Port and Domestic Shipping in the Maritime Administration.

Conferences

In January 2001 the U. S. Section and the Corps of Engineers sponsored a session at the 80th Annual Meeting of the Transportation Research Board held in Washington, D. C. The subject of the session was America's Water Resources Challenges for the 21st Century. Information and conclusions about needs and priorities taken from the series of national listening sessions that were held by the U. S. Army Corps of Engineers were discussed by representatives of the Corps of Engineers, the National Waterways Conference, Inc., the American Association of Port Authorities and the U. S. Fish and Wildlife Service.

Every three years the U. S. Section and the Ports and Harbors Committee of the American Society of Civil Engineers holds an important meeting in the PORTS Series. PORTS '01 was held in Norfolk, Virginia, from April 29 to May 2, 2001. MG Hans A. Van Winkle Spoke at the opening session, sharing the program with Mr. Bobby Bray, Director of the Virginia Port Authority and President of the American Association of Port Authorities. The U. S. Section does not hold a separate meeting in the year of the PORTS Series.

In addition the U. S. Section was a co-sponsor and assisted in the organization of the International Workshop on Channel Design and Vessel Maneuverability that was held in Norfolk, Virginia, May 3-4, 2001. Other co-sponsoring agencies were: the U. S. Army Corps of Engineers; the Department of Transportation, Maritime Administration and U. S. Coast Guard; and the Society of Naval Architects and Marine Engineers.

On May 15, 2001, the U. S. Delegation participated in the Annual General Assembly meeting held in Paris, France. The delegation of Commissioners, which was headed by MG Hans A. Van Winkle, included, Mr. Ballentine, Ms. Bautch,, Mr. Calhoun, Mr. Nichol, Mr. Pyne and Mr. Wakeman. Others attending were Mr. Harry Cook and Mr. Thorndike Saville, Jr., Honorary Members of PIANC, and Major Steven Cade, Executive Officer to MG Van Winkle.

The Association continued the long tradition of holding a PIANC breakfast at the annual meeting of the National Waterways Conference, Inc. The Subject of the presentation was the Olmsted, McAlpine and John T. Myers Lock Projects. The presentations were made by representatives of the Louisville District office of the U. S. Army Corps of Engineers: Ms. Veronica Rife, Mr. Larry Bibelhauser and Mr. George Flickner.

Representatives to Committees and Commissions

The principal business of PIANC is the sponsorship of technical working groups. The U.S. Section is represented by Principal and Co-Principal members of the Commissions that manage the activities of the technical working groups. The representatives were:

Environmental Commission -- Mr. Ronald G. Vann, Chief, Waterways and Ports Branch, U. S. Army Engineer District, Norfolk.

International Cooperation Commission -- Dr. Anatoly B. Hochstein, National Ports and Waterways Institute, University of New Orleans.

Inland Navigation Commission -- Dr. Sandra K. Knight, P.E., USACE, Engineer Research and Development Center, Waterways Experiment Station; Co-Principal, Mr. Tim Parker, Parker Towing Company.

Maritime Navigation Commission -- Mr. Thomas H. Wakeman, III, General Manager, Waterways Development Division, Port Commerce Department, Port Authority of New York and New Jersey; Co-Principal, E. Dan Allen, Moffatt & Nichol Engineers.

Recreational Navigation Commission -- Mr. Richard B. Dornhelm, Vice-President, Moffatt & Nichol Engineers; Co-Principal, Jack C. Cox, PBS&J.

Active Technical Working Groups and Working Group Reports Published During the Year

During the year an important report was published by Inland Navigation Commission (InCom), Working Group 19, Ship Collisions Due to the Presence of Bridges. The Maritime Navigation Commission (MarCom) published an important report of Working Group 34, The Effects of Earthquakes on Port Structures. The Recreation Navigation Commission (RecCom) published a special report, Marina Service Connections. The Environmental Commission (EnviCom) published a special report, Managing Contaminated Dredge Material. New working groups approved were: Access to Sport and Recreation

Boating for Persons with Disabilities, RecCom Working Group 14; and two EnviCom working groups, Generic Biological Assessment Guidance for Dredged Material, (Working Group 8), and Environmental Impacts of Polar Marine Activities, (Working Group 9). The titles of active working groups and the names of the U. S. Representatives are:

InCom WG 21, **Economic Studies of Inland Waterways**. Organized February 1996. Mr. David Grier, USACE, Institute for Water Resources.

InCom WG 22, Safety in Inland Navigation. Organized November 1996. RADM William T. McMullen, Texas A&M, Galveston, Texas.

InCom WG 23, Technical and Economic Problems of Channel Icing. Organized December 1997. Mr. Claude Strauser, USACE District, St. Louis.

InCom WG 24, Vessel Traffic Management in the Inland Waterways. Organized March 1998. Mr. J. Michael Sollosi, U. S. Coast Guard.

InCom WG 25, Maintenance and Renovation of Navigation Infrastructure. Organized July 1999. Mr. James McDonald, USACE, WES and Captain James Blanchar, USACE District, Rock Island.

MarCom WG 33, Fenders. Organized January 1996. Mr. Mark T. Faeth, Han-Padron Associates.

MarCom WG 36, Catalogue of Precast Elements. Organized October 1996. Dr. Billy L. Edge, Texas- A&M University.

MarCom WG 37, Advances in Maritime Intermodal Freight Transportation. Organized September 1997. Mr. M. John Vickerman, VZM TranSystems Corporation.

MarCom WG 38, Polar Navigation. Organized December 1997. Orson P. Smith, Ph.D., University of Alaska, Anchorage.

MarCom WG 39, Monitoring of Breakwaters. Organized January 1998. Mr. James D. Prehn, RLS, Spacial Data Survey.

MarCom WG 40, Guidelines for the Designing of Berm Breakwaters. Organized January 1998. Mr. Jeffrey F. Gilman, P.E., Vice President, Peratrovich, Nottingham & Drage, Inc.

MarCom WG 41, High-Speed Ferries at Sea and Port Approaches. Organized July 1999. LT.Alan L. Blume, U.S. Coast Guard.

RecCom WG 9, Regeneration of Harbour Areas for Sport and Pleasure Navigation Use. Organized July 1995. Mr. Jack C. Cox, PBS&J Consultants.

RecCom WG 10, Provision for Low Cost Moorings for Seasonal Use. Organized July 1995.

RecCom WG 11, Waterway Planning for Marinas and Resorts. Organized February 1997. Mr. Ron Stone, National Marine Manufactures Association.

RecCom 12, Recreational Navigation and Nature. Organized February 1998. Mr. Scott Jackson USACE Waterways Experiment Station and Mr. Paul E. Donheffner, Oregon State Marine Board.

RecCom WG 13, Dredging of Marinas. Organized July 1999. Mr. R. W. Lofgren, Lofgren Imagineering & Construction Company.

RecCom WG 14, Access to Sport and Recreation Boating for Persons with Disabilities. Organized February 2001. Mr. Daniel Natchez, Daniel S. Natchez and Associates, Inc.

EnviCom WG 2, Wildlife Habitat and Port Management. Organized March 1995.

EnviCom WG 4, Environmental Management System for Ports. Organized January 1996.

EnviCom WG 5, Environmental Guidelines for Marine, Nearshore and Inland Confined Disposal Facilities for Contaminated Dredged Material. Organized January 1998. Michael C. Palermo, Ph.D., USACE Waterways Experiment Station and Mr. John C. Roberge, Ocean and Coastal Consultants, Inc.

EnviCom WG 6, Ecological and Engineering Guidelines for Sustainable Development of Inland Navigation as Related to Navigation Infrastructure. Organized July 1999. Craig Fischenich, Ph.D., USACE , Waterways Experiment Station.

EnviCom WG 7, Ecological and Engineering Guidelines for Wetlands Restoration in Relation to the Development, Operation and Maintenance of Navigation Infrastructure. Organized July 1999. Russell Theriot, Ph.D., USACE, Waterways Experiment Station.

EnviCom WG 8, Generic Biological Assessment Guidance for Dredged Material. Organized January 2001. Todd S. Bridges, Ph.D.,

USACE Waterways Experiment Station and Mr. Thomas H. Schadt, Anchor Environmental, LLC.

EnviCom WG 9, Environmental Impacts of Polar Marine Activities. Organized January 2001. Jon E. Zufelt, Ph.D., USACE, Cold Regions Research and Engineering Laboratory.

INTERNATIONAL BOUNDARY WATERS BOARDS

In order to carry out United States obligations under international agreements, the Office of the Chief of Engineers and several Corps divisions and districts with jurisdiction over areas bordering Canada have representation on numerous international boards, committees, and other groups. The majority of these boards were established by the International Joint Commission (IJC) as empowered in accordance with the provisions of the Boundary Waters Treaty of 1909 between the United States and Great Britain (for Canada). IJC boards fall into two broad categories: boards of control, which are more or less permanent and supervise compliance over an IJC order; and engineering, technical, or study boards, which are usually dissolved after completing and reporting on an investigation assignment.

In addition to boards created by the Commission, other international boards and committees are created by treaties or other arrangement in matters concerned with the water resources of joint interest, and the members report directly to the Governments or establishing agency. International boundary waters boards and committees having Corps of Engineers memberships during the fiscal year are listed in Table 45-1. For an explanation of the constitution of the various boards and committees, see the annual reports, Volume II for fiscal years 1977 and 1980.

In recent years the IJC has adopted an ecosystem approach for its Boards with a view toward amalgamating a number of its Boards, where it makes sense to do so, as a first step in the development of international watershed Boards. This approach stemmed from the Commission's recommendations in its 1997 report to the governments of the United States and Canada. This report was provided at the request of governments for a proposal on how the IJC might best assist them to meet the environmental challenges of the 21st century. Subsequently, governments asked the Commission, in a reference dated November 19, 1998, to further define the framework for operation of international watershed boards as recommended by the IJC in its 1997 report. The IJC provided governments with a December 2000 status report on the matter and several of its boards have been amalgamated since 1998.

TABLE 45-1
International Boundary Waters Boards Having Corps of Engineers Members

BOARD NAME	YEAR ESTABLISHED	UNITED STATES REPRESENTATION
1. Int. Lake Superior	1914	*Division Engineer, Great Lakes and Ohio River Division
2. Int. St. Croix River	1915	*District Engineer, New England District
3. Int. Lake Memphremagog	1920	*District Engineer, New York
4. Int. Lake of the Woods Control Board	1925	*District Engineer St. Paul
5. Int. Lake Champlain	1937	*District Engineer, New York
6. Int. Kootenay Lake	1938	*1. District Engineer, Seattle 2. Dept. of Interior, USGS, Boise, ID
7. Int. Rainy Lake Board of Control	1941	*District Engineer, St. Paul
8. Int. Osoyoos Lake	1943	1. District Engineer, Seattle 2. *Dept. of Interior, USGS, Tacoma, WA 3. Washington State Parks & Recreation Commission, Olympia, WA

BOARD NAME	YEAR ESTABLISHED	UNITED STATES REPRESENTATION
9. Int. Red River Board **	2000	1. District Engineer, St. Paul 2. * Dept. of Interior, USBR, Billings, MT 3. Dept. of Interior, EPA, Denver, CO 4. Dept. of Interior, USGS, Bismarck, ND 5. Mayor, City of Fargo, ND 6. ND State Water Commission, Bismarck, ND 7. MN Pollution Control Agency, Detroit Lakes, MN 8. MN Dept. of Natural Resources, Bemidji, MN 9. ND Dept. of Health, Bismarck, ND
10. Int. Niagara	1953	1. *Division Engineer, Great Lakes and Ohio River Division 2. Dept. of Energy, FERC, Wash., D.C.
11. Int. St Lawrence River	1953	1. *Division Engineer, Great Lakes and Ohio River Division 2. Civil Engineer, Retired 3. New York Power Authority 4. Rochester Institute of Technology 5. Cornell University
12. Coordinating Committee on Great Lakes Basic Hydraulic and Hydrologic Data	1953	1. Division Engineer – Great Lakes and Ohio River Division 2. Dept. of Commerce, Ann Arbor, MI
13. Int. Niagara Committee	1955	*Division Engineer, Great Lakes and Ohio River Division
14. Int. Souris River Board ***	2001	1. District Engineer, St. Paul 2. *ND State Engr., Bismark, ND 3. Dept. of Interior, USGS, Bismarck, ND
15. Columbia River Treaty Entities	1964	1. Division Engineer, Northwestern Division 2. *Bonneville Power Admin., Portland, OR
16. Columbia River Treaty	1964	1. *HQUSACE, CECW-ZB, Wash., D.C. 2. Department of Energy, Tucson, AZ
17. Int. Champlain-Richelieu	1975	1. *New York Dept. Environmental Conservation 2. District Engineer, New York 3. Vermont Environmental Conservation. Agency 4. New England River Basins Commission, Staff Associate 5. Dept. of Interior F&WS, Boston, MA
18. Study Team	1999	1. *Deputy Commander, Great Lakes Regional Office, Great Lakes and Ohio River Division 2. Bureau of Reclamation 3. Great Lakes Commission. 4. Council of Great Lakes Governors 5. U.S. Geological Survey 6. Western Sates Water Council

* Signifies U.S. Section Chairman

** Amalgamated Board Comprised of Former Int. Red River Pollution Board and Red River Portion of Former Int. Souris-Red Rivers Engineering Board

*** Amalgamated Board Comprised of Former Int. Souris River Board of Control and Souris River Portion of Former Int. Souris-Red Rivers Engineering Board

Protection of the Waters of the Great Lakes Under the February 10, 1999, Reference

A final report, "Protection of the Waters of the Great Lakes" was submitted to the U.S. and Canadian Governments on February 22, 2000 by the 12-member Study Team. The Study Team was co-chaired by the Deputy Commander of the Great Lakes Regional Office, Great Lakes and Ohio River Division

Because there is uncertainty about the availability of Great Lakes water to meet all ecosystem needs, including human needs, over the long term, the report concludes that water should be managed with caution to protect the resource for the future. It also concludes that international trade law obligations, including the provisions of the North American Free Trade Agreement (NAFTA) and the General Agreement on Tariffs and Trade (GATT), do not prevent Canada and the United States from taking measures to protect their water resources and preserving the integrity of the Great Lakes basin ecosystem so long as there is no discrimination against individuals from other countries in the application of those measures.

The report recommends that federal, state and provincial governments should not authorize or permit any new removals, and should exercise caution with respect to major new or increased consumptive use, until these standards have been promulgated or until 24 months have passed, whichever comes first. States and provinces should also build on the Great Lakes Charter by developing a broader range of consultation procedures than currently exist.

The Final Report responds to the request made by the governments of Canada and the United States in their February 10, 1999 Water Uses Reference for recommendations for the protection of the Great Lakes. The IJC previously issued an Interim Report under this Reference on August 18, 1999. Since issuing its Interim Report, the IJC has obtained additional information from a variety of sources, including 12 public hearings.

INVESTIGATION OF PROJECTS UNDER FEDERAL POWER ACT

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REGULATORY, SUNKEN VESSEL REMOVAL AND NATIONAL EMERGENCY PREPAREDNESS ACTIVITIES

1. Regulatory Activities

Authorities. The following authorities charge the Corps of Engineers with the regulation of various construction related activities in U. S. waters and wetlands: Sections 9 and 10 of the Rivers and Harbors Act of 1899 (structures in waterways and the alteration of waterways); Section 103 of the Marine, Protection, Research, and Sanctuaries Act of 1972 (Ocean Dumping); and Section 404 of the Clean Water Act (discharge of dredged or fill material).

Work Completed. During FY 2001, the Corps reviewed and authorized approximately 83,000 permit activities, 88 percent of which were approved within 60 days. About 7400 projects were issued individual permits, and another 76,000 activities were reviewed and approved under regional or nationwide general permits. General permits are issued to the public at large and define types of minor activities with no more than minimal adverse effects on the aquatic environment, which do not usually require the extensive review necessary for projects authorized by individual permits. Use of general permits provides significant relief to the regulated public by avoiding red tape for small projects with minimal environmental impacts. The Corps denied only about 170 permits during FY 2001 since most projects which might otherwise have been denied a permit were either modified or conditioned to meet Corps requirements, scaled down to qualify for approval under general permits, or withdrawn. About 3,800 permit applications were either withdrawn or canceled. Under the regulatory program, the Corps made over 65,000 jurisdiction determinations in FY 2001, many of which were made in response to requests from landowners who were not applying for permits

The Corps investigated approximately 6,000 alleged illegal activities, most of which were violations of Section 404 of the Clean Water Act. Under the permit program in FY 2001, the Corps authorized the filling of approximately 24,000 acres of wetlands but required the restoration, enhancement, or creation of approximately 44,000 wetland acres.

In August 2001, the Corps proposed new Nationwide Permits. These were intended to increase the protection of the Nation's aquatic resources.

On January 9, 2001 the U.S. Supreme Court invalidated a Corps permit denial by the Chicago District for the filling of isolated waters associated with a landfill by the Solid Waste Agency of Northern Cook County (SWANCC). The Court determined that the Corps long established protocol of asserting section 404 jurisdiction based on use of waters by migratory birds was not supported by the Clean Water Act. This called into question other Section 404 jurisdictional criteria. The administration began considering policy options as a result of this decision.

TABLE A
GENERAL REGULATORY FUNCTIONS

Obligations	
Unobligated Balance - 30 Sep 00	$ 10,522,992
Allotments	$ 124,859,721
Total Funds Available	$ 135,382,712
Obligations	$ 122,372,146
Unobligated Balance- 30 Sep 01	$ 13,010,566
Expenditures	
Unexpended Balance - 30 Sep 00	$ 12,603,964
Allotment	$ 124,859,721
Total Funds Available	$ 137,473,685
Expenditures	$ 121,515,339
Unexpended Balance - 30 Sep 01	$ 15, 948,346

Investigation and Removal of Sunken Vessels

Under the authority of Sections 19 and 20 of the River and Harbor Act of 1988, the Corps of Engineers investigated sunken vessels in navigable waters and removed those obstructing navigation.
For obligation expenditures, see Table B (next page)

TABLE B
REMOVAL OF SUNKEN VESSELS
($000)

Obligations	
Unobligated Balance - 30 Sep 00	$ 2.2
Allotment	$500
Total Funds Available	$502.2*
Obligations	$ 0.0
Unobligated Balance - 30 Sep 01	$0.601
Expenditures	
Unexpended Balance - 30 Sep 00	$ 2.2
Allotment	$ 500
Total Funds Available	$502.2*.
Expenditures	$0.0
Unexpended Balance - 30 Sep 01	$0.601

***** $501.6 Reprogrammed During FY 2001

2. National Emergency Preparedness Activities

Authority. Executive Order 12656, as amended, assigns responsibilities to executive departments and agencies in order to undertake the national emergency planning and preparedness activities necessary to develop an effective national capability to meet essential civilian and national security needs during major domestic crises (including catastrophic disasters) and national security emergencies.

Status. During FY 2001, the Corps of Engineers continued its effort to improve the command's readiness posture and its ability to respond to various national emergencies. Emphasis on those activities to prepare for catastrophic natural and technological disasters and to improve Continuity of Government (COG) programs was continued. The primary focus during FY 2001 was to provide support to two major national level civil planning areas: (a) "support to the nation" ability to mobilize national assets to meet national/regional level emergencies and (b) support to continuity of government and continuity of operations during national emergencies. Lessons learned from Midwest Floods of 1993, as well as those gleaned from events such as Hurricanes Hugo, Andrew and Iniki, Loma Prieta and Northridge Earthquakes and the evolving New Madrid Earthquake scenario, clearly indicate that, while the Federal Response Plan is a solid response system, it does not provide for response to disasters with national implications in a way that is sufficiently timely or comprehensive. To alleviate this situation, the Corps is developing scenario specific plans for catastrophic disasters with the intent to exercise these plans. Such exercises, which will involve federal, state and local officials, should lead to a more timely and effective execution of Corps responsibilities during disasters that have national impacts. The South Pacific Division Earthquake Workshop was held on 12-14 December 2000 in Dana Point, California. Over 250 attendees met to discuss the Federal response to a catastrophic earthquake on the Newport-Inglewood fault. The purpose of this exercise was to bring together federal, state, regional, and local government officials for candid, solution-focused exchanges on intergovernmental preparedness for a catastrophic earthquake event in Southern California. Emphasis was on intergovernmental collaboration and exchange of ideas. Other activities included a continuation of the planning for and maintenance of emergency facilities needed to support continuity of operations. A similar workshop is planned for July of 2002 in Seattle, Washington at the Seattle District to test the Cascadia

Catastrophic Disaster Response Plan. As the FY was closing on another challenging year, terrorists attacked and destroyed the World Trade Center in New York City. With the New York District a victim of the devastating attack, the New England District led the USACE response to manage landfill operations, support Urban Search and Rescue efforts, conduct structural assessments, perform emergency dredging operations and install generators to help restore power to the Financial District. USACE also provided technical assistance for debris removal operations and Deployable Tactical Operation Systems to the city for use as Command and Control centers for "Ground Zero" operations. In each of the responses, the USACE Team Leader cadre and Planning and Response Teams were actively engaged in providing mission and functional support. Within minutes of the World Trade Center attack, terrorist flew an airplane into the Pentagon. Under ESF#3 Team Leader, Jim Crum, Baltimore District personnel and Louisville District's Debris Planning and Response Team responded by developing debris estimates for FEMA at the Arlington County, VA, DFO. The 249th Engineer Battalion was also called on to perform power assessments of the impacted area while the Vicksburg Design Protection Center was called in to evaluate window blast performance. Debris from the Pentagon attack was removed via modification to DOD's onsite renovation contractor. The ESF#3 cell was de-activated two weeks later. For National Emergency Preparedness fiscal year obligations and expenditures, see Table C.

TABLE C
NATIONAL EMERGENCY PREPAREDNESS

Obligations	
Unobligated Balance - 30 Sep 00	$ 692,572
Appropriations FY 01	$ 4,000,000
Total Funds Available	$ 4,692,572
Obligations FY 01	$ 5,165,344
Unobligated Balance - 30 Sep 01	$ 1,046,401
Expenditures	
Unexpended Balance - 30 Sep 00	$ 1,317,263
Appropriations FY 01	$ 4,000,000
Total Funds Available	$ 5,317,263
Expenditures FY 01	$ 4,829,445
Unexpended Balance - 30 Sep 01	$ 2,006,964

CIVIL EMERGENCY MANAGEMENT ACTIVITIES

Authority. Public Law 84-99 (33 U.S.C. 701n) (69 Stat. 186) provides the authority for the U. S. Army Corps of Engineers to provide a full spectrum of emergency management/disaster assistance activities using the Flood Control and Coastal Emergencies (FCCE) appropriation. Under PL 84-99, the Chief of Engineers, acting for the Secretary of the Army, is authorized to undertake activities including disaster preparedness for all natural disasters, Advance Measures (preventive measures when faced with an imminent threat of unusual flooding), emergency operations (Flood Response and Post Flood Response), rehabilitation of flood control works damaged by flood or coastal storm, protection or repair of federally authorized shore protective works threatened or damaged by coastal storm, and provision of emergency water due to drought or contaminated water source. Under The Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.) (88 Stat. 143) (The Stafford Act), the Federal Emergency Management Agency (FEMA) may direct USACE to use its resources to provide assistance in the event of a major disaster or emergency declaration by the President. Under The Stafford Act and its implementing Federal Response Plan, USACE has a standing mission to provide assistance in the area of Public Works and Engineering, Emergency Support Function #3, for response to a major disaster or catastrophic event.

Activities. Overall, the Civil Emergency Management Program ensures timely, effective, and efficient disaster preparedness, response, recovery, and mitigation projects and services on a nationwide basis to reduce loss of life and property damage under DOD, USACE, FEMA, and other agencies' authorities. Major disaster preparedness activities included: the review and updating of disaster preparedness and response plans to ensure viability; training personnel to ensure their capability to respond to disasters; procurement and propositioning of critical equipment and supplies which would likely not be available during initial stages of a response; periodic exercises to test and evaluate plans, personnel and training; and the inspection of Federal and non-Federal flood control projects to ensure their viability to provide flood protection. For each specific event, as needed, Headquarters augments its staff and the staffs of the victim division/district(s) to manage the event, addressing areas such as resource allocations (dollars and people), funding emergency contracts, purchasing needed materials, providing technical and direct assistance, the logistics of moving people and materials, and coordinating with tribal/Federal/state/local agencies involved in the event. These augmentation activities include overtime for Headquarters and field staff, emergency contracts, travel to the event area, purchasing materials and supplies, increased staffing to include Individual Mobilization Augmentees (IMA), and providing Remote Sensing/ Geographic Information System (RS/GIS) services.

Significant Events. In 2001, a Flood Control and Coastal Emergencies program of around $50 million and $44 million in support to FEMA may have made the year appear slow. However, the numerous low-intensity responses had the effect of involving virtually all districts and divisions, either in direct response or a supporting role. The many challenges included ice and tropical storms, major floods, earthquakes, and an almost unimaginable terrorist attack.

The year's first significant response began with Tulsa District providing emergency power and drinking water to Oklahomans after a major ice storm. As the spring flood season began, the upper Mississippi again threatened thousands of acres of crops and homes with a major flood. Seven districts were directly involved in a multi-division flood-fight that saw existing levees raised or strengthened emergency levees built, and over 5 million sandbags issued. As hurricane season opened in June, the first storm of the season, Tropical Storm Allison, produced over 36 inches of rainfall across Houston, southeast Texas and Louisiana. The worst damage was around Houston as almost 120,000 people and 44,000 structures, including the Texas Medical Center, were flooded. The Galveston District led a response that included debris removal oversight, emergency power at the Medical Center, and installation of over 900

travel trailers. Then in July, flash floods hit West Virginia and the Louisville District responded to remove debris, demolish 631 structures, and build 153 mobile home pads. First on the exercise schedule was the Northwestern Division (NWD) Flood Exercise of 30-31 May 2001 in Portland, Oregon. The NWD scenario focused on PL 84-99 response during a major flood event on the Missouri River and brought together over 90 attendees. The South Atlantic Division (SAD) Flood Workshop followed on the 23-25 May 2001 in Atlanta, Georgia. The SAD workshop focused on a hurricane response to Puerto Rico and brought together over 100 mostly USACE responders. The Southwestern Division (SWD) closed the year's wave of regional exercises with a Regional Hurricane Readiness Workshop on 24-25 July 2001. The format of a joint Federal-state-local real-time, face-to-face table-top exercise was unique to Texas as nearly 145 participants met in Galveston, Texas to discuss response to a 150 mile-per-hour hurricane hitting the nation's fourth largest city. Each of the exercises provided a unique perspective on a regional response scenario. The result was a series in insightful workshops where a wide variety of disaster-related issues were discussed and explored. As a means of summarizing each workshop, an after-action report was prepared.

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APPENDIX A
Flood Control Reservoirs Operable September 30, 2001

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Characteristics of Dam			
							Project Functions	Type	Height (Feet)	Length (Feet)
ALASKA										
Chena River Lakes	Chena Tanana	Chena River	Fairbanks	1979	2,000	NPP	FRD	Earth	50	40,200
ARIZONA										
Adobe	Gila	Skunk Creek	Phoenix	1982	18,350	NPP	FR	Earth	109	2,275
Alamo	Colorado	Bill Wms. River	Wenden	1968	1,045,300	560	FRSWX	Earth	283	975
Cave Buttes	Gila	Cave Creek	Phoenix	1979	46,600	NPP	FRX	Earth	109	2,275
Dreamy Draw	Gila	Dreamy Draw	Phoenix	1973	320	NPP	FRX	Earth	50	448
New River	Gila	New River	Phoenix	1985	43,520	NPP	F	Earth	104	2,320
Painted Rock	Gila	Gila River	Gila Bend	1959	2,476,340	NPP	FR	Earth	181	4,780
Tat Momolikot	Gila	Santa Rosa Wash	Casa Grande	1974	198,550	NPP	GWX	Earth	75.5	12,500
Whitlow Ranch	Gila	Queen Creek	Superior	960	34,500	NPP	F	Earth	25	978
ARKANSAS										
Blakely Mountain	Ouachita Dam	Ouachita	Hot Springs	1955	2,768,500	20,900	FP	Earth	235	1,100
Blue Mountain	Arkansas	Petit Jean River	Paris	1947	257,900	2,910	FRWX	Earth	115	2,800
DeGray	Ouachita	Caddo	Arkadelphia	1971	881,900	6,400	FPRSQN	Earth	243	3,400
DeQueen	Red	Rolling Fork River	DeQueen	1977	136,100	1,680	FSQRW	Earth	160	2,360
Dierks	Red	Saline River	Dierks	1975	96,800	1,360	FSRAW	Earth & Rock	153	2,500
Gillham	Red	Cossatot River	Gillham	1975	221,800	1,370	FSQW	Earth & Rock	160	1,750
Millwood	Red	Little River	Ashdown	1966	1,854,930	29,200	FSW	Earth	88	17,554

APPENDIX A
Flood Control Reservoirs Operable September 30, 2001

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Characteristics of Dam			
							Project Functions	Type	Height (Feet)	Length (Feet)
Narrows Dam	Ouachita	Little Missouri	Murfreesboro	1949	407,900	2,500	FP	Con-crete	175	941
Nimrod	Arkansas	Fourche LaFve River	Plainview	1942	336,010	3,550	FSWX	Con-crete	97	1,012
CALIFORNIA										
Black Butte	Sacramento	Stony Creek	Orland	1963	160,000	770	FIRX	Earth	156	2,970
Brea	Santa Ana	Brea Creek	Fullerton	1942	4,009	NPP	FR	Earth	87	1,765
Buchanan Dam H.V. Eastman Lake	San Joaquin	Chowchilla River	Chowchilla	1975	150,000	470	FIRW	Earth & Rock	205.5	1,800
Carbon Canyon	Santa Ana	Carbon Canyon River	Brea	1961	6,614	NPP	FR	Earth	99	2,150
Coyote Valley	Russian	East Fork Russian River	Ukiah	1959	122,500	1,700	FRXS	Earth	160	3,500
Dry Creek (Warm Springs) Lake and Channel	Russian	Dry Creek	Healdsburg	1983	381,000	500	FRSW	Earth	319	3,000
Farmington	San Joaquin	Littlejohn Creek	Farmington	1952	52,000	NPP	F	Earth	60	7,800
Fullerton	Santa Ana	East Fullerton Crk	Fullerton	1941	764	NPP	FR	Earth	46	575
Hansen	Los Angeles	Big Tujunga Wash	Los Angeles	1940	51,000	120	FRX	Earth	97	10,475
Harry L. Englebright	Sacramento	Yuba River	Marysville	1941	69,000	400	DR	Con-crete	280	1,142
Hidden Dam- Hensley Lake	San Joaquin	Fresno River	Madera	1975	90,000	5,000	FIRW	Earth	163	5,730
Isabella	San Joaquin	Kern River	Bakersfield	1953	570,000	1,850	FIRW	Earth	185	4,952
Lopez	Los Angeles	Pacoima Wash	San Fernando	1954	440	NPP	F	Earth	50	1,333

APPENDIX A
Flood Control Reservoirs Operable September 30, 2001

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Characteristics of Dam			
							Project Functions	Type	Height (Feet)	Length (Feet)
Martis Creek	Sacramento	Martis Creek	Reno	1971	20,400	71	FSR	Earth	113	2,670
Merced County Stream Group										
Bear	San Joaquin	Bear Creek	Merced	1954	7,700	NPP	F	Earth	92	1,830
Burns	San Joaquin	Burns Creek	Merced	1950	7,000	NP	F	Earth	55	4,075
Mariposa	San Joaquin	Mariposa Creek	Merced	1948	15,000	NPP	F	Earth	88	1,330
Owens	San Joaquin	Owens Creek	Merced	1949	3,600	NPP	F	Earth	75	790
Mojave River	Mojave	Mojave River	Victorville	1971	89,669	NPP	FR	Earth	106	1,250
New Hogan	San Joaquin	Calaveras River	Valley Springs	1963	325,000	715	FIRX	Earth & Rock	210	1,960
North Fork, American River	Sacramento	American River	Auburn	1939	14,700	280	DR	Con-crete	155	620
Pine Flat	San Joaquin	Kings River	Piedra	1954	1,000,000	NPP	FIRX	Con-crete	429	1,820
Prado	Santa Ana	Santa Ana River	Corona	1941	196,235	NPP	FRWX	Earth	106	2,280
Redbank and Fancher Creeks	San Joaquin	Fancher Creek	Fresno	1993	9,712	NPP	F	Earth	44	16,135
San Antonio	Santa Ana	San Antonio Creek	Upland	1956	7,703	NPP	FX	Earth	160	3,850
Santa Fe	San Gabriel	San Gabriel River	Duarte	1949	32,109	NPP	FRX	Earth	92	23,800
Sepulveda	Los Angeles	Los Angeles River	Van Nuys	1941	17,425	NPP	FR	Earth	57	15,444
Success	San Joaquin	Tule River	Porterville	1960	85,000	400	FIRX	Earth	142	3,490
Terminus	San Joaquin	Kaweah River	Visalia	1961	150,000	345	FIRX	Earth	250	2,375
Whittier Narrows	San Gabriel	San Gabriel	El Monte	1957	49,143	NPP	FRX	Earth	56	16,960

APPENDIX A
Flood Control Reservoirs Operable September 30, 2001

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Characteristics of Dam			
							Project Functions	Type	Height (Feet)	Length (Feet)
		River and Rio Hondo								
COLORADO										
Bear Creek	Missouri	Bear Creek	Denver	1978	30,810	109	FRX	Earth	180	5,300
Chatfield	Missouri	South Platte River	Denver	1974	231,429	1,412	FRX	Earth	148	12,400
Cherry Creek	Missouri	Cherry Creek	Denver	1950	93,920	852	FRX	Earth	141	14,300
John Martin	Arkansas	Arkansas River	Lamar	1943	605,115	1,844	FIR	Con-crete & Earth	106	13,962
Trinidad	Arkansas	Purgatoire River	Trinidad	1977	124,463	563	FIRX	Earth	200	6,610
CONNECTICUT										
Black Rock	Housatonic	Branch Brook	Thomaston	1970	8,700	20	FR	Earth	154	933
Colebrook River	Connecticut	West Branch, Farmington River	Riverton	1969	97,700	760	FRSX	Earth	223	1,300
Hancock Brook	Housatonic	Hancock Brook	Plymouth	1960	4,030	40	FRW	Earth	57	630
Hop Brook	Housatonic	Hop Brook	Middlebury	1968	6,970	21	FR	Earth	97	520
Mansfield Hollow	Thames	Natchaug River	Willimantic	1952	52,000	450	FRW	Earth	68	12,420
Northfield Brook	Thames	Northfield Brook	Thomaston	1965	2,430	8	FRW	Earth	118	810
Thomaston	Housatonic	Naugatuck River	Thomaston	1960	42,000	NPP	F	Earth	142	2,000
West Thompson	Thames	Quinebaug River	Thompson	1965	26,800	200	FRW	Earth	70	2,550
IDAHO										

APPENDIX A
Flood Control Reservoirs Operable September 30, 2001

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Characteristics of Dam			
							Project Functions	Type	Height (Feet)	Length (Feet)
Lucky Peak	Columbia	Boise River	Boise	1955	306,000	2,820	FIR	Earth	340	2,340
ILLINOIS										
Alpine Dam	Upper Mississippi	Keith Creek	Rockford	1942	1,770	NPP	F	Earth	48	600
Carlyle	Upper Mississippi	Kaskaskia River	Carlyle	1967	983,000	26,000	FSNRWA	Earth	67	6,570
Farmdale	Upper Mississippi	Farm Creek	East Peoria	1951	15,500	NPP	F	Earth	80	1,275
Fondulac	Upper Mississippi	Fondulac Creek	East Peoria	1951	3,780	NPP	F	Earth	67	1,000
Lewings Lake Dam	Upper Mississippi	S. Branch Kent Creek	Rockford	1935	1,081	121	FR	Earth	23	1,090
Page Park Dam	Upper Mississippi	Kent Creek	Rockford	1980	12,014	NPP	F	Earth	41	3,670
Shelbyville	Upper Mississippi	Kaskaskia River	Shelbyville	1970	684,000	11,100	FSNRW	Earth	108	3,000
Rend Lake	Upper Mississippi	Big Muddy River	Benton	1970	294,000	18,900	FQRSW	Earth	54	10,600
INDIANA										
Brookville	Ohio	East Fork of Whitewater River	Brookville	1974	359,600	2,250	FRSW	Earth& Rock	182	3,000
Cagles Mill	Ohio	Mill Creek	Tere Haute	1952	228,120	1,400	FRX	Earth	150	950
Cecil M. Harden	Ohio	Raccoon Creek	Rockville	1960	132,800	1,100	FRX	Earth	117	1,790
J. Edward Roush	Ohio	Wabash River	Huntington	1969	153,100	500	FRW	Earth	91	5,332
Mississinewa	Ohio	Mississinewa	Peru	1967	368,400	1,100	FRW	Earth	137	8,100
Monroe	Ohio	Salt Creek	Harrodsburg	1964	441,000	3,280	FARS	Earth	93	1,400
Patoka	Ohio	Patoka River	Ellsworth	1978	301,600	2,010	FRSQW	Earth	84	1,550

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Salamonie	Ohio	Salamonie	Wabash	1966	263,600	976	FRW	& Rock Earth	133	6,100
IOWA										
Big Creek Barrier Dam	Upper Mississippi	Big Creek	Polk City	1974	4,200	100	F	Earth	83	4,550
Big Creek Diversion Dam	Upper Mississippi	Big Creek	Polk City	1970	27,500	7,600	FR	Earth	80	1,750
Big Creek Terminal Dam	Upper Mississippi	Big Creek Diversion Channel	None	1972	27,500	7,600	F	Earth	95	480
Coralville	Upper Mississippi	Iowa River	Iowa City	1958	475,000	5,430	FARWQ	Earth	100	1,400
Red Rock	Upper Mississippi	Des Moines River	Des Moines	1969	1,717,235	19,000	FARWQ	Earth	110	5,676
Rathbun	Missouri	Chariton River	Centerville	1969	552,000	11,000	FNRWXQS	Earth	86	10,600
Saylorville	Upper Mississippi	Des Moines River	Des Moines	1975	585,000	5,950	FARWQS	Earth	105	6,750
Virden Creek Dam	Upper Mississippi	Virden Creek	Waterloo	1979	8,300	NPP	F	Earth	33	3,040
KANSAS										
Clinton	Missouri	Wakarusa River	Lawrence	1977	397,200	7,000	FSWXRQ	Earth & Rock Earth	114	9,250
Council Grove	Arkansas	Grand (Neosho)	Council Grove	1964	112,882	3,259	FSQR		96	6,500
El Dorado	Arkansas	Walnut River	El Dorado	1981	246,882	8,400	FSQRW	Earth	99	20,930
Elk City	Arkansas	Elk River	Independence	1966	287,200	4,440	FSQWR	Earth	107	4,840

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							Project Functions	Type	Height (Feet)	Length (Feet)
Fall River	Arkansas	Fall River	Fall River	1949	254,900	2,330	FSWQR	Earth	94	6,015
Hillsdale	Missouri	Big Bull Creek	Hillsdale	1981	160,000	4,580	FSQRWX	Earth	75	11,600
John Redmond	Arkansas	Grand (Neosho)	Burlington	1964	626,000	9671	FSQRW	Earth	86.5	21,790
Kanopolis	Missouri	Smoky Hill River	Marquette	1948	450,000	3,815	FRWXS	Earth	131	15,360
Marion	Arkansas	Cottonwood River	Marion	1968	141,890	6,210	FRQS	Earth	67	8,795
Melvern	Missouri	Marais des Cygnes	Melvern	1972	363,000	6,930	FRQWXS	Earth	98	9.700
Milford	Missouri	Republican River	Junction City	1965	1,160,000	15,600	FRSXWN	Earth & Rock	126	6,300
Pearson Skubitz Big Hill	Arkansas	Big Hill Creek	Cherryvale	1981	39,540	1,190	FSRW	Earth	83	3,902
Perry	Missouri	Deleware River	Perry	1969	770,000	12,500	FRSXWN	Earth & Rock	96	7,750
Pomona	Missouri	110 Mile Creek	Pomona	1963	230,000	4,000	FRSWXQ	Earth & Rock	85	7,750
Toronto	Arkansas	Verdigris River	Toronto	1960	200,800	2,660	FSQWR	Earth	90	4,712
Tuttle Creek	Missouri	Big Blue River	Manhattan	1962	2,346,000	15,800	FRWXQNS	Earth & Rock	157	7,500
Wilson	Missouri	Saline River	Wilson	1964	776,000	9,000	FIRWXN	Earth	160	5,600

KENTUCKY

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							Project Functions	Type	Height (Feet)	Length (Feet)
Barren River	Ohio	Barren River	Glasgow	1964	815,200	4,340	FARS	Earth	146	3,970
Buckhorn	Ohio	Middle Fork of Kentucky River	Buckhorn	1960	168,000	550	FQRW	Earth	162	1,020
Carr Creek	Ohio	Carr Fork	Hazard	1976	47,700	530	FQRW	Earth & Rock	130	720
Cave Run	Ohio	Licking River	Farmers	1974	614,100	6,790	FQRW	Earth & Rock	148	2,740
Dewey	Ohio	Johns Creek	Paintsville	1949	93,000	1,100	FARW	Earth	118	913
Fishtrap	Ohio	Levisa Fork, Big Sandy River	Pikeville	1968	164,360	569	FARW	Rock	195	1,100
Grayson	Ohio	Little Sandy	Grayson	1967	118,990	1,050	FQRW	Earth & Rock	120	1,460
Green River	Ohio	Green River	Camp-bellsville	1969	723,200	5,070	FRSQW	Earth & Rock	142	2,350
Martins Fork	Cumberland	Martins Fork	Harlan	1978	21,00	578	FQ	Con-crete	97	574
Paintsville	Ohio	Paint Creek	Paintsville	1983	73,500	261	FQRW	Earth & Rock	160	1,600
Nolin	Ohio	Nolin River	Kyrock	1963	609,400	2,890	FAR	Earth & Rock	174	990
Rough River	Ohio	Rough River	Leitchfield	1958	334,400	2,180	FRX	Earth &	124	1,530

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							Project Functions	Type	Height (Feet)	Length (Feet)
Taylorsville	Ohio	Salt River	Taylorsville	1983	291,670	1,625	FQRW	Rock Earth & Rock	164	1,280
Yatesville	Ohio	Blaine Creek	Yatesville	1988	86,951	3,921	FQRW	Earth & Rock	105	760
LOUISIANA										
Bayou Bodcau	Red	Bayou Bodcau	Shreveport	1949	357,300	NPP	FRW	Earth	70	12,850
Caddo Lake	Red	Cypress Bayou	Shreveport	1971	175,000	32,700	NFRS	Con-crete & Earth		3,700
Wallace Lake	Red	Cypress Bayou	Shreveport	1946	96,100	2,300	FQRS	Earth	30	4,994
MARYLAND										
Jennings Randolph Lake	Potomac	North Branch Potomac River	Barnum	1981	130,900	952	FQRSW	Earth & Rock	296	2,130
MASSACHUSETTS										
Barre Falls	Connecticut	Ware River	Barre	1958	24,000	NPP	FRW	Earth & Rock	62	885
Birch Hill	Connecticut	Millers River	So. Roylaston	1941	49,900	NPP	FRW	Earth & Rock	56	1,400
Buffumville	Thames	Little River	Charlton	1958	12,700	200	FRW	Earth & Rock	66	3,255

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							Project Functions	Type	Height (Feet)	Length (Feet)
Charles River Natural Valley Storage	Charles	Charles River	Millis	1983	35,000	NPP	F	Non-structural	--	--
Conant Brook	Connecticut	Conant Brook	Monson	1966	3,740	NPP	F	Earth & Rock	85	1,050
East Brimfield	Connecticut	Quinebaug River	Fiskdale	1960	30,000	360	FRW	Earth & Rock	55	520
Hodges Village	Connecticut	French River	Oxford	1959	12,800	NPP	FRW	Earth & Rock	55	2,140
Knightville	Connecticut	Westfield River	Huntington	1941	49,000	NPP	FRW	Earth & Rock	160	1,200
Littleville	Connecticut	Middle Branch, Westfield River	Chester	1965	32,400	275	FRWS	Earth & Rock	1,164	1,360
Tully	Connnecticut	Tully River	Fryville	1949	22,000	300	FRW	Earth & Rock	62	1,570
West Hill	Blackstone	West River	Uxbridge	1960	12,350	NPP	FRW	Earth & Rock	51	2,400
Westville	Thames	Quinebaug River	Sturbridge	1961	11,100	23	FRW	Earth & Rock	78	560

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MINNESOTA										
Big Stone Lake-Whetstone River (HWY 75)	Upper Mississippi	Minnesota River	Odessa	1974	45,000	12,700	FRW	Earth	25	13,700
Lac Qui Parle Chippewa River	Upper Mississippi	Chippewa River	Watson	1950	([2])	NPP	FRWX	Rolled Earth	23.3	17,975
LacQui Parle	Upper Mississippi	Minnesota River	Montevideo	1950	158,700	7,750	FRWX	Rolled Earth	25	4,100
Marsh Lake	Upper Mississippi	Minnesota River	Montevideo	1953	35,900	8,100	FARS	Rolled Earth	19.5	11,800
Orwell	Red River	Otter Tail River of the North	Fergus Falls	1953	14,100	790	FARS	Rolled Earth	47	1,355
Red Lake	Red River	Red Lake River of the North	Red Lake	1951	3,270,000	288,800	FARSX	Earth & Rock	15.5	36,500
MISSISSIPPI										
Arkabutla Lake	Lower Mississippi	Coldwater River	Arkabutla	1945	525,300	5,100	F	Earth & Rock	81	11,500
Enid Lake	Lower Mississippi	Yocona River Mississippi	Enid	1952	660,000	6,100	F	Earth & Rock	99	8,400
Grenada Lake	Lower Mississippi	Yalobusha River	Grenada	1954	1,337,400	9,800	F	Earth & Rock	102	13,900
Okatibbee	Pascagoula	Okatibbee Creek	Meridian	1969	142,400	1,280	FQSR	Earth	67	6,543

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Sardis Lake	Lower Mississippi	Little Tallahatchie Rivere	Sardis	1940	1,570,000	10,700	F	Earth & Rock	117	15,300
MISSOURI										
Bear Creek Dam	Upper Mississippi	Bear Creek	Hannibal	1962	8,700	NPP	F	Earth	81	1,250
Clearwater	White	Black River	Piedmont	1948	413,700	1,630	FRWX	Earth & Rock	154	4,225
Long Branch	Grand Chariton	Little CharIton	Macon	1980	65,000	2,430	FRSQW	Earth	71	3,800
Little Blue River Lakes										
Blue Springs	Missouri	Little Blue River	Kansas City	1988	26,600	560	FRW	Earth & Rock	78	2,500
Longview	Missouri	Little Blue River	Kansas City	1986	46,900	930	FRWQ	Earth	120	1,900
Pomme de Terre	Missouri	Pomme de Terre River	Hermitage	1961	650,000	7,820	FRWXA	Earth & Rock	155	4,630
Smithville	Missouri	Little Platte River	Smithville	1982	246,500	7,190	FSQRW	Earth	95	4,200
Wappapello	Lower Mississippi	St. Francis River	Wappapello	1941	613,200	4,100	FR	Earth & Rock	109	2,700

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NEBRASKA										
Harlan County	Missouri	Republican Riv	Republican City	1952	850,000	13,600	FIRWXA	Earth	107	11,827
Papillion Creek and Tributaries										
Glenn Cunningham (Site 11)	Missouri	Knight Creek	Omaha	1975	17,910	391	FQEX	Earth	67	1,940
Standing Bear (Site 16)	Missouri	Trib of Big Papillion Creek	Omaha	1973	5,220	137	FRX	Earth	70	1,460
Ed Zorinsky (Site 18)	Missouri	Boxelder Creek	Omaha	1991	6,910	418	FR	Earth	64	11,400
Wehrspann (Site 20)	Missouri	S. Papillion Creek	Omaha	1991	1,990	203	FR	Earth	59	11,810
Salt Creek & Tributaries Olive Creek (Site 2)	Missouri	S. Trib. Olive Br. Creek	Kramer	1964	5,470	174	FR	Earth	45	3,020
Blue Stem (Site 4)	Missouri	N. Trib Olive Br. Creek	Sprague	1963	10,260	316	FR	Earth	57	2,760
Wagon Train (Site 8)	Missouri	N. Trib. Hickman Creek	Holland	1963	9,280	303	FR	Earth	52	1,650
Stagecoach Site (9)	Missouri	S. Trib. Hickman Creek	Hickman	1964	6,640	196	FB	Earth	48	2,250
Yankee Hill (Site 10)	Missouri	Cardwell Creek	Denton	1966	7,560	208	FR	Earth	52	3,100
Conestoga (Site 12)	Missouri	Holmes Creek	Denton	1964	10,640	230	FR	Earth	63	3,000
Town Lake (Site 13)	Missouri	Middle Creek	Pleasantdale	1966	8,080	255	FR	Earth		
Pawnee (Site 14)	Missouri	N. Middle Creek	Emerald	1965	29,520	728	FR	Earth	65	5,000
Holmes Park Lake (Site 17)	Missouri	Antelope Creek	Lincoln	1963	6,510	100	FR	Earth	55	7,700
Branched Oak (Site	Missouri	Oak Creek	Raymond	1968	97,560	1,780	FR	Earth	70	5,200

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							Project Functions	Type	Height (Feet)	Length (Feet)
18)										
NEW HAMPSHIRE										
Blackwater	Merrimack	Blackwater River	Webster	1941	46,000	NPP	FRW	Earth	75	1,150
Edward MacDowell	Merrimack	Nubanusit Brook	West Peterborough	1950	12,800	NPP	FRW	Earth	67	1,030
Franklin Falls	Merrimack	Pemigewasset River	Franklin	1943	154,000	NPP	FRW	Earth	140	1,740
Hopkinton-Everett	Merrimack	Contoocook River	West Hopkinton	1962	71,500	200	FRW	Earth	76	790
	Merrimack	Piscataquog River	East Weare	1962	87,500	120	FRW	Earth	115	2,000
Otter Brook	Connecticut	Otter Brook	Keene	1958	18,300	85	FRW	Earth	133	1,288
Surry Mountain	Connecticut	Ashuelot River	Keene	1941	32,500	265	FRW	Earth	86	1,670
NEVADA										
Mathews Canyon	Colorado	Mathews Canyon	Caliente	1957	6,271	NPP	FX	Earth	71	800
Pine Canyon	Colorado	Pine Canyon	Caliente	1957	7,747	NPP	FX	Earth	92	884
NEW MEXICO										
Abiquiu	Rio Grande	Rio Charma	Abiquiu	1963	1,192,800	NPP	FXS	Earth	325	1,540
Cochiti	Rio Grande	Rio Grande	Pena Blanca	1975	582,019	1,200	FRWX	Earth	241	28,300
Conchas	Arkansas	Canadian River	Tucumcari	1939	513,900	2,694	FI	Con-crete & Earth	200	19,400
Galisteo	Rio Grrande	Galisteo Creek	Santa Fe	1970	89,468	NPP	FX	Earth	156	2,820
Jemez Canyon	Rio Grande	Jemez River	Bernailillo	1953	97,425	NPP	FX	Earth	146.6	780
Santa Rosa	Pecos	Pecos	Santa Rosa	1979	438,364	NPP	FIX	Earth	212	1,950

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Two Rivers:										
Diamond "A" Dam	Pecos	Rio Hondo	Roswell	1963	163,775	NPP	FX	Earth	998	4,885
Rocky Dam	Pecos	Rocky Arroyoo							118	2,940
NEW YORK										
Almond	Susquehanna	Canacadea Crk	Hornell	1949	14,005	162	FRW	Earth	90	1,260
Arkport	Susquehanna	Canisteo Crk	Arkport	1940	7,900	NPP	F	Earth	113	1,200
East Sidney	Susquehanna	Ouleout Crk	Franklin	1950	33,550	210	FRW	Con-crete & Earth	130	2,010
Mount Morris	Genesee	Genesee River	Mount Morris	1952	337,000	170	FR	Con-crete	210	1,028
Whitney Point	Susquehanna	Otselic River	Whitney Point	1942	86,440	1,200	FRW	Earth	95	4,900
NORTH CAROLINA										
B. Everett Jordan	Cape Fear	New Hope	Durham	1982	753,500	14,300	FQRSWX	Earth	112	1,330
Falls	Neuse	Neuse	Raleigh	1983	335,620	11,300	FQRSWX	Earth	92	1,915
W. Kerr Scott	Yadkin Pee Dee	Yadkin	Wilkesboro	1963	153,000	1,470	FARSX	Earth	148	1,740
NORTH DAKOTA										
Baldhill	Red River of the North	Sheyenne River	Valley City	1951	101,365	5,430	FARS	Earth	61	1,650
Bowman-Haley	Missouri	North Fork, Grand River	Haley	1967	92,980	1,750	FSRWK	Earth	79	5,730
Homme	Red River of the North	South Branch of Park River	Park River	1953	6,700	194	FARS	Earth	67	865

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Pipestem	James River	Pipestem Creek	Jamestown	1974	146,880	885	FRWX	Earth	108	4,000
OHIO										
Alum Creek	Ohio	Alum Creek	Africa	1975	134,800	348	FRSW	Con-crete & Earth	93	10,000
Berlin	Ohio	Mahoning Creek	Deerfield	1943	91,200	240	FARSWQ	Con-crete & Earth	96	5,750
Caesar Creek	Ohio	Caesar Creek	Wilmington	1978	242,200	13,300	FRSQW	Earth & Rock	165	2,750
Clarence J. Brown	Ohio	Buck Creek	Springfield	1974	63,700	1,010,	FQRW	Earth & Rock	72	6,620
Deer Creek	Ohio	Deer Creek	New Holland	1968	102,500	727	FRW	Earth	93	3,880
Delaware	Ohio	Olen Tangy River	Deleware	1961	273,000	1,325	FRWX	Earth	118	1,400
Dillon	Ohio	Licking River	Zanesville	1961	273,000	1,325	FRWX	Earth	118	1,400
Michael J. Kirwan	Ohio	West Branch, Mahoning River	Newton Falls	1966	78,700	580	FAQRSW	Earth	83	9,900
Mosquito Creek	Ohio	Mosquito Creek	Cortland	1944	104,100	700	FARSWQ	Earth	47	5,650
Muskingum River Reservoirs:										
Atwood	Ohio	Indian Fork	New Cumberland	1937	49,700	1,540	FRX	Earth	65	3,700
Beach City	Ohio	Sugar Creek	Beach City	1937	71,700	420	FRX	Earth	64	5,600
Bolivar	Ohio	Sandy Creek	Bolivar	1938	149,600	NPP	FR	Earth	87	6,300

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Charles Mill	Ohio	Black Fork	Mifflin	1936	88,000	1,350	FRX	Earth	48	1,390
Clendening	Ohio	Brushy Fork	Tippecanoe	1937	54,000	1,800	FRX	Earth	64	950
Dover	Ohio	Tuscarawas River	Dover	1938	203,000	350	FRX	Con-crete	83	824
Leesville	Ohio	McGuire Creek	Leesville	1937	37,400	1,000	FRX	Earth	74	1,694
Mohawk	Ohio	Walhondoing Riv	Nellie	1937	285,000	NPP	FR	Earth	111	2,330
Mohicanville	Ohio	Lake Fork	Mohicanville	1936	102,000	NPP	FR	Earth	46	1,220
Piedmont	Ohio	Stillwater Creek	Piedmont	1937	65,000	2,270	FRX	Earth	56	1,750
Pleasant Hill	Ohio	Clear Fork	Perrysville	1938	87,700	850	FRX	Earth	113	775
Senecaville	Ohio	Seneca Fork	Senecaville	1937	88,500	3,550	FRSX	Earth	45	2,350
Tappan	Ohio	Little Stillwater Crk	Tappan	1936	61,60-0	2,350	FRX	Earth	52	1,550
Wills Creek	Ohio	Wills Creek	Conesville	1937	196,000	900	FRX	Earth	87	1,950
North Branch, Kokosing River Lake	Ohio	North Branch of Kokosing River	Fredericktown	1973	14,900	98	FRW	Earth	71	1,400
Paint Creek	Ohio	Paint Creek	New Petersburg	1972	145,000	710	FRSQW	Earth & Rock	118	700
Tom Jenkins	Ohio	East Branch, Sunday Creek	Gloucester	1951	26,900	394	FRSWX	Con-crete	84	944
West Fork Mill Creek	Ohio	Mill Creek	Mt Healthy	1952	11,380	200	FRX	Earth	100	1,100
William H. Harsha	Ohio	Little Miami River	Williamsburg	1978	284,500	18,760	FRSQW	Earth	200	1,450
OKLAHOMA										
Arcadia	Arkansas	Deep Fork	Edmond	1986	92,010	1,820	FSR	Earth	102	5,250

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Birch	Arkansas	River Birch Creek	Barnsdall	1977	59,030	1,145	FSQRW	Earth	97	3,190
Canton	Arkansas	North Canadian River	Canton	1948	383,800	3,800	FSIRW	Earth	68	15,140
Copan	Arkansas	Little Caney River	Copan	1983	227,700	4,850	FSQRWN	Earth	73	7,730
Fort Supply	Arkansas	Wolf Creek	Fort Supply	1942	100,700	1,820	FSX	Earth	85	11,865
Great Salt Plains	Arkansas	Salt Fork of the Arkansas River	Cherokee	1941	271,400	8,690	FRWX	Earth	68	6,010
Heyburn	Arkansas	Polecat Creek	Sapulpa	1950	55,395	880	FRWXS	Earth	89	2,920
Hugo	Red	Kiamichi River	Hugo	1974	955,200	13,140	FSQRW	Earth	101	10,200
Hulah	Arkansas	Caney River	Bartlesville	1951	289,000	3,570	FSQRNW	Earth	94	5,200
Kaw	Arkansas	Arkansas River	Ponca City	1976	1,327,160	16,750	FSQRWN	Earth	125	9,466
Oologah	Arkansas	Verdigris River	Oologah	1963	1,559,270	31,040	FSNRW	Earth	137	4,000
Optima	Arkansas	North Canadian River	Hardesty	1978	229,500	5,340	FSRW	Earth	120	15,200
Pine Creek	Red	Little River	Wright City	1969	465,780	3,750	FSQWR	Earth	124	7,712
Sardis	Red	Jackfork Creek	Clayton	1982	396,900	13,610	FSRW	Earth	101	14,138
Skiatook	Arkansas	Hominy Creek	Skiatook	1984	500,700	10,190	FSQRW	Earth	143	3,590
Waurika	Red	Beaver Creek	Waurika	1977	325,680	10,100	FISQWR	Earth	106	16,637
Wister	Arkansas	Poteau River	Wister	1949	427,480	7,386	FSAXWR	Earth	99	5,700
OREGON										
Applegate	Rogue	Applegate River	Medford	1981	82,000	988	AFIQRSW	Gravel Em-bank-ment	242	1,300
Blue River	Columbia	Blue River	Blue River	1968	85,000	975	FINR	Earth	319	1,329
Cottage Grove	Columbia	Coast Fork,	Cottage Grv	1942	30,060	1,155	FINR	Con-	114	2,110

APPENDIX A
Flood Control Reservoirs Operable September 30, 2001

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Characteristics of Dam			
							Project Functions	Type	Height (Feet)	Length (Feet)
		Willamette River						crete & Earth		
Dorena	Columbia	Row River	Cottage Grv	1949	70,500	1,885	FINR	Con-crete & Earth	145	3,352
Fall Creek	Columbia	Middle Fork, Willamette River	Eugene	1965	115,000	1,865	FINR	Rock-fill & Con-crete	193	5,100
Fern Ridge	Columbia	Long Tom River	Eugene	1941	110,000	10,305	FINR	Rock-fill & Con-crete	49	6,624
Willow Creek	Columbia	Willow Creek	Heppner	1983	13,250	96	FRN	Roller Com-pacted Con-crete	160	1,780
PENNSYLVANIA										
Alvin R. Bush	Susquehanna	Kettle Creek	Renovo	1962	75,000	160	FRWQ	Earth & Rock	165	1,350
Aylesworth Creek	Susquehanna	Aylesworth Creek	Archbald	1970	1,700	64	FRQ	Earth & Rock	90	1,270
Beltzville	Delaware	Pohopoco	Lehighton	1971	68,250	947	FQRSWA	Earth	170	4,560

APPENDIX A
Flood Control Reservoirs Operable September 30, 2001

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Characteristics of Dam			
							Project Functions	Type	Height (Feet)	Length (Feet)
		Creek						& Rock		
Blue Marsh	Delaware	Tulpehocken Creek	Reading	1978	50,010	960	FAQRSW	Earth & Rock	98	1,775
Conemaugh	Ohio	Conemaugh River	Saltsburg	1952	262,700	800	FW	Con-crete & Earth	137	1,265
Cowanesque	Susquehanna	Cowanesque River	Lawrenceville	1980	89,000	1085	FRSQW	Earth & Rock	151	3,100
Crooked Creek	Ohio	Crooked Creek	Ford City	1940	93,900	350	FRW	Earth	143	1,480
Curwensville	Susquehanna	West Branch, Susquehanna River	Curwensville	1965	124,200	790	FRS	Earth	131	2,850
East Branch, Clarion River	Ohio	East Branch, Clarion River	Wilcox	1952	84,300	90	FARQW	Earth	184	1,725
Foster Joseph Sayers	Susquehanna	Bald Eagle Creek	Blanchard	1969	99,000	1,730	FRWQ	Earth	100	6,835
Francis E. Walter (Bear Creek)	Delaware	Lehigh River	White Haven	1961	109,610	80	FRW	Earth & Rock	234	3,000
Gen. Edgar Jadwin	Delaware	Dyberry Creek	Honesdale	1960	24,500	NPP	F	Earth	109	1,255
Hammond Lake	Susquehanna	Crooked Creek	Tioga	1978	63,000	680	FRQW	Earth & Rock	122	6,450

APPENDIX A
Flood Control Reservoirs Operable September 30, 2001

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Characteristics of Dam			
							Project Functions	Type	Height (Feet)	Length (Feet)
Indian Rock	Susquehanna	Codorus Creek	York	1942	28,000	NPP	F	Earth & Rock	83	1,000
Kinzua	Ohio	Allegheny River	Warren	1965	1,180,000	1,900	PFAQRW	Con-crete & Earth	1`77	1,877
Loyalhanna	Ohio	Loyalhanna Creek	Saltsburg	1942	95,300	210	FRW	Con-crete & Earth	114	960
Mahoning Creek	Ohio	Mahoning Crk	New Bethlehem	1941	74,200	170	FRW	Con-crete	162	926
Prompton	Delaware	West Branch, Lackawaxen River	Honesdale	1960	52,000	290	FRW	Earth	140	1,200
Raystown	Susquehanna	Raystown Branch, Juniata River	Huntingdon	1973	762,000	8,300	FRWPQ	Earth & Rock	225	1,700
Shenango	Ohio	Shenango River	Sharpsville	1966	191,400	1,910	FAQRW	Con-crete	68	720
Stillwater	Susquehanna	Lackawanna River	Uniondale	1960	12,000	85	FS	Earth	77	1,700
Tioga Lake	Susquehanna	Tioga River	Tioga	1978	62,000	470	FRQW	Earth & Rock	140	2,710
Tionesta	Ohio	Tionesta Creek	Tionesta	1940	133,400	480	FRW	Earth	154	1,050
Union City	Ohio	French Creek	Union City	1970	47,640	NPP	F	Earth	88	1,420
Woodcock Creek	Ohio	French Creek	Meadville	1973	20,000	118	FQRA	Earth	90	4,650

APPENDIX A
Flood Control Reservoirs Operable September 30, 2001

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Characteristics of Dam			
							Project Functions	Type	Height (Feet)	Length (Feet)
Youghiogheny River	Ohio	Youghiogheny River	Confluence	1943	254,000	450	FARWQ	Earth	184	1,610
SOUTH DAKOTA										
Cold Brook	Missouri	Cold Brook	Hot Springs	1953	7,200	36	FRWX	Earth	127	925
Cottonwood Springs	Missouri	Cottonwood Springs Creek	Hot Springs	1970	8,385	41	FRWX	Earth	123	1,190
Lake Traverse:										
Reservation Dam	Red River of the North	Bois de Sioux River	Wheaton	1941	177,000	10,925	FRX	Rolled Earth	14	9,100
White Rock	Red River of the North	Bois de Sioux River	Wheaton	1941	96,000	3,850	FRX	Rolled Earth	16	14,400
TEXAS										
Addicks	San Jacinto	South Mayde Crk	Addicks	1948	204,500	NPP	FX	Earth	49	61,166
Aquilla	Brazos	Aquilla Creek	Hillsboro	1983	146,000	3,280	FSX	Earth	104.5	11,890
Barker	San Jacinto	Buffalo Bayou	Barker	1945	207,000	NPP	FX	Earth	27	72,844
Belton	Brazos	Leon River	Belton	1954	1,097,600	12,300	FIRSX	Earth	192	5,524
Benbrook	Trinity	Clear Fork, Trinity River	Fort Worth	1952	258,600	3,770	FNRXA	Earth	130	9,130
Canyon	Guadalupe	Guadalupe River	New Braunfels	1964	366,400	346,400	FRSX	Earth	224	4,410
Ferrells Bridge Dam-Lake O' the Pines	Red	Cypress Creek	Jefferson	1959	842,100	18,700	FRS	Earth	97	10,600
Granger Dam and Lake	Brazos	San Gabriel River	Granger	1980	244,200	4,400	FRSWX	Earth	115	16,320
Grapevine	Trinity	Denton Creek	Grapevine	1952	425,500	7,280	FNRSXA	Earth	137	12,850

APPENDIX A
Flood Control Reservoirs Operable September 30, 2001

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Characteristics of Dam			
							Project Functions	Type	Height (Feet)	Length (Feet)
Hords Creek	Colorado	Hords Creek	Coleman	1948	25,310	510	FARSX	Earth	91	6,800
Joe Pool	Trinity	Mountain Creek	Grand Prairie	1994	304,000	7,470	FRSX	Earth	109	22,360
Jim Chapman Lake	Red	Sulphur River	Cooper	1994	441,200	19,305	FRSWX	Earth	79	28,070
Lavon	Trinity	East Fork, Trinity River	Dallas	1953	748,200	21,400	FRSW	Earth	81	19,483
Lewisville	Trinity	Elm Fork, Trinity River	Lewisville	1954	989,700	23,280	FRSX	Earth	125	32,888
Navarro Mills	Trinity	Richland Creek	Corsicana	1963	212,200	5,070	FRSX	Earth	82	6,700
North San Gabriel Dam, Lake Georgetown	Brazos	North Fork, San Gabriel River	Georgetown	1980	130,800	1,310	FRSWX	Rock	164	6,700
O.C. Fisher	Colorado	North Concho River	San Angelo	1952	396,400	5,440	FRSX	Earth	128	40,885
Pat Mayse	Red	Sanders Creek	Arthur City	1967	182,940	5,940	FRSW	Earth	96	7,080
Proctor	Brazos	Leon River	Comanche	1963	374,200	4,610	FRSX	Earth	86	13,460
Ray Roberts	Trinity	Elm Fork	Denton	1987	1,064,600	29,350	FRSX	Earth	109	14,965
Somerville	Brazos	Yegua Creek	Somerville	1967	507,500	11,460	FRSX	Earth	80	26,175
Stillhouse Hollow	Brazos	Lampasas River	Belton	1968	630,400	6,430	FRSX	Earth	200	15,624
Waco	Brazos	Bosque River	Waco	1965	726,400	7,270	FRSX	Con-crete & Earth	145	24,618
Wright Patman	Red	Sulphur River	Texarkana	1962	2,654,300	20,300	FRSX	Earth	100	18,500
UTAH										
Little Dell Lake	Jordan River	Dell Creek	Salt Lake City	1993	20,500	1,000	FS	Earth	224	1,700
VERMONT										

APPENDIX A
Flood Control Reservoirs Operable September 30, 2001

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Characteristics of Dam			
							Project Functions	Type	Height (Feet)	Length (Feet)
Ball Mountain	Connecticut	West River	Jamaica	1961	54,600	75	FRW	Con-crete & Earth	265	915
North Hartland	Connecticut	Ottauguechee River	North Hartland	1960	71,420	220	FRW	Con-crete & Earth	185	1,520
North Springfield	Connecticut	Black River	Springfield	1960	51,067	290	FRW	Con-crete & Earth	120	2,940
Townsend	Connecticut	West River	Townshend	1961	33,700	100	FRW	Con-crete & Earth	133	1,700
Union Village	Connecticut	Ompompa-noosuc River	Union Village	1950	38,000	NPP	FRW	Con-crete & Earth	170	1,100
VIRGINIA										
John W. Flannagan	Ohio	Pound River	Haysi	1963	145,700	310	FAWR	Con-crete & Earth	250	960
Gathright Dam & Lake Moomaw	James	Jackson	Alleghany	1979	123,739	2,532	FQR	Earth & Rock	257	1,172

APPENDIX A
Flood Control Reservoirs Operable September 30, 2001

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Characteristics of Dam			
							Project Functions	Type	Height (Feet)	Length (Feet)
North Fork of Pound River	Ohio	North Fork of Pound	Pound	1968	11,300	349	FRSW	Earth & Rock	122	600
WASHINGTON										
Howard A. Hanson	Green	Green River	Kanaskat	1961	106,000	1,600	FAS	Rock	235	500
Mill Creek	Columbia	Mill Creek	Walla Walla	1942	8,300	225	FR	Earth	125	3,200
Mud Mountain	Puyallup	White River	Enumclaw	1953	106,000	NPP	FR	Rock	427	810
WEST VIRGINIA										
Beech Fork	Ohio	Beech Fork	Lavalette	1977	37,540	450	FRW	Earth	86	1,080
Bluestone	Ohio	New River	Hinton	1952	631,000	1,800	FRWX	Con-crete	180	2,048
Burnsville	Ohio	Little Kanawha	Burnsville	1977	65,400	550	FQRW	Earth & Rock	89	1,400
East Lynn	Ohio	Twelvepole Creek	East Lynn	1970	82,500	823	FQRW	Earth & Rock	122	650
R. D. Bailey	Ohio	Guyandotte River	Justice	1979	203,700	440	FQRW	Earth & Rock	310	1,397
Stonewall Jackson Lake	Ohio	West Fork	Weston	1988	74,650	360	FAQAS	Con-crete	95	620
Summersville Lake	Ohio	Gauley River	Summersville	1965	413,800	407	FANR	Rock	390	2,280
Sutton	Ohio	Elk River	Sutton	1960	265,300	270	FNAR	Con-crete	220	1,921
Tygart River	Ohio	Tygart River	Grafton	1938	287,700	620	FNAR	Con-crete	230	1,921

APPENDIX A
Flood Control Reservoirs Operable September 30, 2001

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Characteristics of Dam			
							Project Functions	Type	Height (Feet)	Length (Feet)
WISCONISIN										
Eau Galle	Chippewa	Eau Galle	Spring Valley	1969	43,600	153	FR	Earth	122	1,800

KEY FOR PROJECT FUNCTIONS:

A - Low Flow Augmentation
D - Debris Control
F - Flood Control
I - Irrigation
N - Navigation
P - Power
Q - Water Quality Control
R - Public Recreation (Annual Attendance exceeding 5,000)
S - Water Supply
W - Fish and Wildlife (Federal or State)
X - Water Conservation and Sedimentation

APPENDIX A
Flood Control Reservoirs Constructed or Contributed to by Corps of Engineers But Operated by Others September 30, 2000

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Project Functions	Type	Height (Feet)	Length (Feet)
CALIFORNIA										
Big Dry Creek	San Joaquin	Big Dry Creek	Fresno	1948	16,250	NPP	F	Earth	40	20,038
Camanche	San Joaquin	Mokelumne River	Clements	1963	431,500	NPP	FRS	Earth & Rock	171	2,450
Cherry Valley	Tuolumne	Cherry Creek	Sonora`	1956	268,000	475	FS	Earth & Rock	315	2,500
Del Valle	Alameda	Arroyo Del Valle	Livermore	1968	77,000	200	FRS	Earth	223	880
Eaton Wash	Rio Hondo	Eaton Wash	Pasadena	1937	960	NPP	F	Earth	82	1,795
New Bullards Bar	Sacramento	Yuba River	Marysville	1968	960,000	1,910	FIRPW	Concrete	645	2,323
New Don Pedro	San Joaquin	Tuolumne River	Modesto	1970	2,030,000	3,520	FISP	Earth & Rock	565	1,920
New Exchequer	San Joaquin	Merced River	Merced	1966	1,026,000	1,900	FIR	Rock	480	1,200
Oroville	Sacramento	Feather River	Oroville	1964	3,539,000	5,838	FIRSW	Earth	770	6,850
Tahchevah Creek	Whitewater	Tahchevah Creek	Palm Springs	1965	960	NPP	F	Earth	42	3,610
COLORADO										
Pinon Canyon	Colorado	Pinon Canyon Arroyo	Trinidad	1954	4,350	NPP	FW	Earth		
CONNECTICUT										
East Branch	Housatonic	East Branch, Naugatuck River	Torrington	1964	4,350	NPP	FR	Earth		
Hall Meadow Brook	Housatonic	Hall Meadow Brook	Torrington	1962	8,620	NPP	F	Earth & Rock		

APPENDIX A
Flood Control Reservoirs Constructed or Contributed to by Corps of Engineers But Operated by Others September 30, 2000

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Project Functions	Type	Height (Feet)	Length (Feet)
Mad River	Connecticut	Mad River	Winchester	1963	9,700	10	FR	Earth		
Sucker Brook	Connecticut	Sucker Brook	Winchester	1970	1,480	NPP	F	Earth		
HAWAII										
Kaneohe-Kailua	Kaneohe	Kaneohe Stream	Kaneohe	1981	3,800	26	FR	Earth		
IDAHO										
Ririe	Upper Snake	Willow Creek	Idaho Falls	1975	100,500	364	FIR	Earth		
MARYLAND										
Savage River	Potomac	Savage	Westernport	1952	20,000	360	FRSW	Earth & Rock		
MISSOURI										
Bear Creek	Upper Mississippi	Bear Creek	Hannibal	1962	8,700	NPP	F	Earth		
NEW MEXICO										
Cuchillo Negro	Rio Grande	Cuchillo Creek	Truth or Con-sequence	1991	13,500	NPP	F	Roller Com-pacted Con-crete		
NEW YORK										
Onondaga	Oswego	Onondaga Creek	Syracuse	1949	18,200	NPP	F	Earth		

APPENDIX A
Flood Control Reservoirs Constructed or Contributed to by Corps of Engineers But Operated by Others September 30, 2000

Name	River Basin	Stream	Community in Vicinity	Cal. Year Placed in Useful OP	Total Storage (Acre-Ft.)	Permanent Pool (Acreage) or No Pool (NPP)	Project Functions	Type	Height (Feet)	Length (Feet)
OKLAHOMA										
Altus	Red	North Fork of the Red River	Altus	1948	152,430	6,260	FIS	Con-crete	90	1,104
Grand Lake O' the Cherokees	Arkansas	Grand (Neosho) River	Disney	1941	2,197,000	46,500[6]	FRP	Con-crete	147	6,565
Lake Hudson	Arkansas	Grand (Neosho) River	Locust Grove	1964	444,600	10,900[6]	FRP	Con-crete & Earth	90	4,494
TEXAS										
Lake Kemp	Red	Wichita River	Wichita Falls	1972	502,900	15,590	FIS	Earth	115	8,890
UTAH										
Big Wash	Beaver	Big Wash	Milford	1961	1,200	NPP	F	Earth	34	2,814
VERMONT										
East Barre	Winooski	Jail Branch	East Barre	1938	12,050	NPP	F	Earth	65	1,460
Waterbury	Winooski	Waterbury	Waterbury	1938	64,700	890	FRP	Earth	158	1,800
Wrightsville	Winooski	North Branch	Wrights-ville	1938	20,300	570	FR	Earth	115	1,525
WASHINGTON										
Wynoochee	Chehalis	Wynoochee River	Montesano	1972	70,000	1,150	FSARI	Con-crete & Earth	177	1,700

APPENDIX B
Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Aberdeen & Vicinity, SD (Sec 205)	1995		2002	Local Protection
Aitkin County, CSAH 10, MN (Sec 14)	1999		2001	Streambank Protection
Alamogordo, NM	2001		Undetermined	Local Protection
Alenaio Stream, Hawaii, HI	1995	1997	1997	Local Protection
Alii Drive, Hawaii, HI (Sec 14)	1999	2000	2000	Shoreline Protection
Aloha-Rigolette Area, LA	1996		1999	Interior Drainage
Allegheny River, First Street, Ford City, PA	2001		2002	Streambank Protection
Alton to Gale Levee System, Mississippi River, IL and MO	1983		Indefinite	Local Protection
American River, Common Features, CA	2000		Undetermined	Local Protection
American River, Folsom Modification, CA	2000		Undetermined	Local Protection
American River, Natomas, CA	2000		Undetermined	Local Protection
Aquashicola Creek (Borough of Palmerton)	1998	1999	1999	Local Protection
Arecibo River, PR	2000		2007	Local Protection
Arkansas River at Riverfront Park, North Little Rock, AR	1998	1998	1999	Streambank Protection
Arizona Flood Warning, AZ (Sec 205)	1998		2001	Local Protection
Aroostook River, Fort Fairfield, ME (Sec 205)	1999	2001	2001	Local Protection
Ascalmore-Tippo Items, MS	1984		1987	Local Protection
Ashland Road Bridge, Four Mile Creek, NE (Sec 14)	1996		1996	Streambank Protection
Atchafalaya Basin, LA	1928	(2)	2031	Floodway and Levees
Atchafalaya Basin Floodway System, LA	1985		TBD	FC, Rec, and Public Access
B. Everett Jordan Dam and Lake, NC	1967	1982	2003	Reservoir
Badger Creek near Browning, Glacier County, MT (Sec 14)	1993	1994	1994	Streambank Protection

APPENDIX B
Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Batesville Sewage Lagoon	1990	1990	1990	Streambank Protection
Batesville Water Tower, Batesville, AR (Sec 14)	1998	1999	1999	Streambank Protection
Battle Mountain, NV (Sec 205)	1998		2003	Local Protection
Bayou Des Glaises, LA	1938	1939	1939	Interior Drainage
Beaver Creek at Slough Hollow Road, MO (Sec 14)	1998		2000	Streambank Protection
Beech Fork, Bardstown, KY (Sec 205)	1998		2002	Local Protection
Bethel Bank Stabilization, AK	1992		1997	Emergency Bank Stabilization
Big Sioux River & Skunk Creek, Sioux Falls, SD	2000		2006	Local Protection
Big Wood River, Deer Creek, Bridge, ID (Sec 14)	1998	2001	2001	Local Protection
Blue River Channel, Kansas City, MO	1984		2005	Local Protection
Brays Bayou (Houston), TX	1998		2013	Local Protection
Brush Creek, Jeanette, PA (Sec 14)	1994		2001	Streambank Protection
Buffalo Bayou and Tributaries, TX	1956		Indefinite	Local Protection
Buffalo Creek, Freeport, PA (Sec 14)	1994		2001	Streambank Protection
Buford Trenton Irrigation District, ND	1998		2009	Local Protection
Cache Creek Settling Basin, CA	1990		1995	Local Protection
Cache La Poudre, CO (Sec 14)	2000		Unscheduled	Streambank Protection
Cape Girardeau-Jackson, MO	1992		2002	Local Protection
Cato Spring, Fayetteville, AR (Sec 205)	1996	1996	1996	Local Protection
Cedar Falls, IA (Sec 205)	1998	2000	2000	Local Protection
Cedar Point Seawall Bay St. Louis, MO	1998	2000	2001	Shoreline Protection
Cedar River, Renton, WA (Sec 205)	1998		2001	Local Protection
Center Treatment Plant, Elkhorn Run, PA	2001		2002	Streambank Protection
Chaska, MN	1988		1998	Local Protection

APPENDIX B
Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Cheat River Basin, WV FWS	1997	1999	2001	Local Protection
Chicago Shoreline, IL	1997	1991	2001	Local Protection
Choctawhatchee/Pea Rivers, Alabama and Florida	1995		1996	Flood Warning
Choctawhatchee/Pea Rivers, Elba/Geneva Levees, AL	1998		1999	Local Protection Levees
Cibola County Rd 7, Cubero, NM (Sec 14)	2000		2001	Streambank Protection
City Ditch, Brevoort, IN (Sec 205)	1998		2002	Interior Drainage
City of Folsom Willow & Humbug Creeks, CA (Sec 205)	1999		Unscheduled	Local Protection
Clear Creek, TX	1988		2010	Local Protection
Clifton, AZ	1994		2002	Local Protection
Clinton River Spillway, MI	2000		2001	Local Protection
Clinton Wastewater Treatment Plant, Clinton, NC (Sec 205)	1999	2000	2002	Local Protection
Colorado River at Grand Junction, CO (Sec 205)	1994	1997	1997	Local Protection
Comite River Diversion, LA	1999		2010	Local Protection
Cooper Creek, Cherry Valley, TN (Sec 14)	2000	2000	2000	Stream Protection
Cooper Creek, WA	1999		2004	Local Protection
Corte Madera Creek, CA	1966		Indefinite	Local Protection
Coulson Park, CO (Sec 14)	2000		2001	Streambank Protection
County Road 62, Santa Fe, NM (Sec 14)	1994	1995	1995	Streambank Protection
Coyote and Berressa Creeks, CA	1994		Unscheduled	Local Protection
Crooked Creek, Harrison, AR	1994	1994	1996	Local Protection, channel improvement
Crookston, MN	2000		2003	Local Protection
Cypress Creek, TX	2000	2001	2001	Local Protection, non-structural
Dade County, FL	1975		2038	Shore Protection

APPENDIX B
Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Dallas Floodway Extension, TX	2001		2007	Local Protection
Dane Avenue, Waveland, MS (Sec 14)	2001		2002	Shoreline Protection
Dearborn River near Wolf Creek Lewis & Clark County, MT (Sec 14)	1994	1994	1994	Streambank Protection
Delaware River, Water Intake, Kickapoo Reservation, KS (Sec14)	1996		2001	Streambank Protection
Delaware River Vicinity of Port Jervis, NY	1995		1996	Local Protection (Ice Diversion)
Demonstration Erosion Control, MS	1985		Indefinite	Local Protection
Deshee River, Brevoort, IN (Sec 205)	1998		2002	Interior Drainage
Des Moines Recreational River and Greenbelt, IA	1989		Indefinite	Recreation
Dry Creek (Warm Springs) Lake & Channel, CA	1967	1983	1996	Reservoir
Dry Fork of Little Fork, Willard, KY (Sec 205)	2000	1999	2001	Local Protection
East Nishnabotna River, Page County Bridge, IA (Sec 14)	1992	1993	1994	Streambank Protection
East St. Louis and Vicinity, IL - Rehabilitation	1988		2005	Local Protection
El Paso, TX	1971	1973	Undetermined	Local Protection
Elk, Creek, Lancaster County, NE (Sec 14)	2000		2002	Streambank Protection
Elk Creek Lake, OR	1971		Indefinite	Reservoir
Emmonak Shoreline Erosion, AK (Sec 14)	1998	1999	1999	Shoreline Protection
Escanaba Delta County, MI (Sec 14)	1999		2001	Streambank Protection
Fairfield Vicinity Streams, CA	1985	1993	1993	Local Protection
Falls Lake, NC	1973	1983	2003	Reservoir
Fallon, NV (Sec 205)	1998		Unscheduled	Local Protection
Faulkner Island, CT	2000	2001	2001	Shoreline Protection
Flatrock River, Rushville, IN (Sec 205)	1998		2002	Local Protection
Fort Wayne and Vicinity, IN	1994		2002	Local Protection

APPENDIX B
Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Four Rivers Basin, FL	1966	1986	1996	Local Protection
Fourche Bayou, Vicinity of Little Rock, AR	1987	1996	2002	Local Protection
Francis Bland Floodway Ditch, AR	1986		2003	Local Protection
Gallatin River, (I-90), Gallatin County, MT	1991	1992	1992	Streambank Protection
Grank Forks, ND-East Grand Forks, MN	1999		2006	Local Protection
Grand Prairie Region and Bayou Meto Basin, AR	1999		2009[9]	Water Supply
Grand River, Chariton County, MO (Sec 14)	1998		2000	Streambank Protection
Gray's Creek, TN (Sec 14)	1998	1998	1998	Streambank Protection
Grand River, Route A Bridge, MO (Sec 14)	2001		2001	Streambank Protection
Grants Pass, Douglas County, OR	2001		2002	Streambank Protection
Great Bend,KS	1988		1994	Local Protection
Great Miami River, Fairfield, OH (Sec 14)	1999		2001	Streambank Protection
Greenbrier River, WV, Flood Warning System	1998	1999	1999	Local Protection
Greenwood Bendway, Site 3, MS	1986		1988	Riverbank Protection
Greenwood Bendway, Site 4, MS	1987		1988	Riverbank Protection
Greenwood Bendway, Site 5, MS	1987		1988	Riverbank Protection
Guadalupe River, CA	1992		2006	Local Protection
Guntersville Lake, Guntersville, AL	1988		1989	Streambank Protection
Gulf of Mexico, Highway 193, Mobile Co., AL	2000		2001	Shoreline Protection
Gulfside Seawall, Waveland, MS	2000		2001	Shoreline Protection
Halstead,KS	1991		1995	Local Protection
Hamilton County Streambank Stabilization, TN	1999		2002	Streambank Protection
Hargus Creek, Circleville, OH (Sec 205)	1996	1997	1997	Local Protection
Hatchie River, Alcora & Tippah Co, MS	1997	1998	1999	Local Protection

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Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Helena & Vicinity, AR	1997		2002	Local Protection
Highway 52, Bellevue, IA (Sec 14)	2001	2002	2002	Streambank Protection
Highway 119, Derry, LA (Sec 14)	1994	1994	1994	Streambank Protection; Complete
Highway 218, Grand Chenier, LA (Sec 14)	1995	1996	1996	Bank Stabilization
Highway 495, Natchitoches,Parish, LA (Sec 14)	1994	1994	1994	Streambank Protection; Complete
Highway 69 at Black River, AR (Sec 14)	1999	1999	1999	Streambank Protection
Holes Creek, OH	1998		2003	Local Protection
Homme Lake and Dam, ND	1995		2003	Dam Safety Assurances
Horn Lake Creek, MS	1993	1999	1999	Local Protection
Houston, MN (Sec 205)	1995		2000	Local Protection
Hudson Branch, Howard County, MD (Sec 14)	2001		2001	Emergency Streambank Protection
Huntington Sewer Main, WV (Sec 14)	1999	1999	1999	Streambank Protection
Jacksonport, White River, AR	1995	1996	1997	Local Protection
James R. Olin Flood Control Project, VA	1994		1998	Local Protection
James River Road (CR213), SD (Sec 14)	1999		2001	Emergency Streambank Protection
Jim Chapman Lake, TX	1958	1991	1994	Reservoir, channel improvement
Joe Pool Lake, TX	1975	1986	1994	Reservoir
Kahawainui Stream, Oahu, HI (Sec 205)	1989	1990	1990	Local Protection
Kahoma Stream, Maui, HI	1986	1990	1990	Local Protection
Kanawha Ave, So Charleston, WV (Sec 14)	1999	1999	1999	Streambank Protection
Kanawha River, So Charleston-Green Valley, WV	2000	2001	2001	Streambank Protection
Kanawha River, So. Charleston, Sewer Main, WV (Sec 14)	2000	2001	2001	Streambank Protection
Kawainui Marsh, Oahu HI (Sec 205)	1995	1997	1997	Local Protection
Kaweah River, CA	1999		Unscheduled	Local Protection

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Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Keizer, OR (Sec 205)	2000	2001	2001	Local Protection
Klamath River, Klamath Glen Levee, CA 1996	1996		1997	Local Protection
Lackawanna River at Scranton, PA	2001		2003	Local Protection
Lake Ashtabula-Baldhill Dam, ND	1994	1997	2000	Dam Safety/Major Rehabilitation
Lake Pontchartrain, LA	1967		2013	Local Protection
Lake Wichita, Holliday Creek, TX	1987		1995	Local Protection
Larose to Golden Meadow, LA	1972		2007	Local Protection
Las Cruces, NM	2000	2001	2002	Local Protection
Lesueur River, CSAH 28, Blue Earth County, MN (Sec 14)	1999		2000	Streambank Protection
Levisa & Tug Forks of the Big Sandy River & Cumberland River, KY, WV & VA	1981		Indefinite	Local Protection
Little Calumet River, IN	1990		2010	Local Protection
Little Dell Lake, UT	1985	1993	1996	Reservoirs
Little Puerco River, Gallup, NM (Sec 205)	2002	1993	2003	Flood Control
Logan Creek, Pender, NE (Sec 205)	1996		1999	Local Protection
Long Branch Lake, MO	1973	1980	Indefinite	Reservoir
Long Road, Chehali River, WA (Sec 205)	2000		2001	Local Protection
Loosahatchie, Memphis, TN (Sec 14)	1998	1998	1999	Streambank Protection
Los Angeles County Drainage Area (LACDA), CA	1995		2002	Local Protection
Louisiana State Penitentiary Levee, LA	1999		2003	Flood Control
Loves Park, IL	1991	2004	2004	Local Protection
Lower Columbia River, Barlow Point	2000		2001	Streambank Protection
Lower Sacramento Area Levee Reconstruction, CA	1996		2002	Local Protection
Lower San Joaquin River, CA (Snagging and Clearing)	1985		Indefinite	Snagging and Clearing

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Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Madrid Fire Station, Madrid, MO (Sec 14)	1995	1996	1997	Streambank Protection
Magpie Creek & Don Julio, CA (Sec 205)	1997		2001	Local Protection
Magpie Creek City of Sacramento, CA (Sec 205)	1997		2006	Local Protection
Maple Creek E. Fork, Howells, NE (Sec 205)	1994	1996	1996	Local Protection
Marshall, MN	1996		2001	Local Protection
Marysville/Yuba City Levee Reconstruction, CA	1993		2002	Local Protection
Masefau Bay, Tutuila Island, American Samoa (Sec 14)	1989	1992	1992	Shoreline Protection
Mayfield Creek, KY (Sec 205)	1992	1993	1998	Local Protection
Mazon River Twp Road, IL	1994	1995	1996	Streambank Protection
McCook and Thronton Reservoirs, IL	1999		2014	Flood Control
Meramec River Basin (Valley Park Levee), MO	1991		2004	Local Protection
Merced County Streams, CA	1985	1994	Indefinite	Reservoirs
Metropolitan Louisville, Pond Creek, KY	2000		2007	Local Protection
Metropolitan Region of Cincinnati Duck Creek, OH	1999		2007	Local Protection
Middle Rio Grande Flood Protection, Bernalillo to Belen, NM	1997		Undetermined	Local Protection
Mid-Valley Area Levee Reconstruction, CA	1993		2002	Local Protection
Milk River, Malta, MT (Sec 205)	1994	1997	1998	Local Protection
Mill Creek, Fort Smith, AR (Sec 205)	1990	1992	1999[5]	Local Protection
Mill Creek, OH	1970		Indefinite	Local Protection
Mill Creek, WA	1999		2002	Local Protection
Milo Creek, ID	2001		2000	Local Protection[10]
Mingo Creek, OK	1988		1998	Local Protection

APPENDIX B
Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Mississippi River Channel Improvements (IA, IL, KY, LA, MI, MO & TN)	1928		2020	Channel Improvements
Mississippi River Levees	1928		2031	Main Line Levees
Missouri National Rec River, NE & SD	1985		2008	Local Protection
Missouri River Levee System, IA, NE, KS and MO	1948		Unscheduled	Local Protection
Molly Ann's Brook, NJ	1995		2002	Local Protection
Mon River, Sewage Treatment Plant, Point Marion, PA	1997		2001	Streambank Protection
Mon River, Water St. Point Marion, PA	1998		2001	Streambank Protection
Moon Treatment Plant, Elkhorn Run, Pa	2001		2002	Streambank Protection
Moravian Creek, Wikesboro, NC (Sec 205)	2001	2002	2002	Local Protection
Mt. St. Helens Sediment Control, WA	1986	1990	To be determined	Local Protection
Muddy Creek Cascade, Vaughn, MT (Sec 14)	1992		1994	Streambank Protection
Muddy Creek, Grundy Co, MO	1997	1999	2000	Streambank Protection
Mudline to Pineville, MS	1984	1985	1985	Streambank Protection
Mud Mountain Dam, WA (Dam Safety Assurance)	1986	1995	2002	Modernization of Dam
Muskingham River Lakes, OH	1976		1988	Major Rehabilitation
Muskingum River Lakes, OH (Dam Safety Assurance)	1982		Indefinite	Modernization of Dams
Napa River, CA	1999		Undetermined	Local Protection
New Orleans to Venice, LA	1969		2017	Local Protection
Nickleplate Road, French Creek, Fairfield, PA	2000		2002	Streambank Protection
Nishnabotna River, Hamburg, IA (Sec 205)	1996		2001	Local Protection
Nogales Wash, AZ	1994		Indefinite	Flood Warning System
Nonconnanh Creek, TN & MS	1990		Indefinite[3]	Local Protection

APPENDIX B
Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Norco Bluffs, Santa Ana River, CA	1998		Indefinite	Local Protection
North Branch Chicago River	1970		Indefinite	Snagging and Clearing
North Fork, KY Rivers, Jackson, KY (Sec 205)	1997		2001	Local Protection
North Fork, KY River, Vocational School (Sec 14)	2001		2001	Local Protection
Oates Creek, GA	1990	1993	1992	Local Protection
Ocean City-Isle of Wight Bay, MD (Sec 14)	2001		2001	Emergency Streambank Protection
Ocean Pines, MD (Sec 14)	2001		2002	Emergency Streambank Protection
O'Hare Reservoir, IL	1990		2001	Reservoir
Ohio River Flood Protection, IN	1999		Indefinite	Local Protection
Ohio River, Gallia Co, St. Rt 7, River Mile 275, OH	2001		2002	Streambank Protection
Ohio River, Perry County, IN (Sec 14)	2001		2002	Local Protection
Otter Creek, Shannon Hills, AR (Sec 205)	1984	1984	1986	Local Protection
Ouachita River Levees, LA	1990		Indefinite[7]	Local Protection
Pajaro River, CA	1987	1989	1989	Local Protection
Panola-Quitman Item C, MS	1984		1993	Local Protection
Papillion Creek and Tributaries Lake, NE	1972	1974	1995	Reservoirs
Pelucia Creek, Item 1, MS	1985	1986	1987	Local Protection
Pelucia Creek, Item 1A, MS	1987	1987	1987	Local Protection
Pelucia Creek, Item 2, MS	1990	1993	1993	Local Protection
Pelucia Creek, Item 3, MS	1990	1993	1994	Local Protection
Pelucia Creek, Item 4, MS	1993	1993	1994	Local Protection
Peninsula Drainage District #1, OR (Sec 205)	1997	1999	2000	Local Protection
Perry County L & D Nos. 1, 2, 3, MO	1977	1985	1985	Local Protection
Perry Creek, IA	1995		2005	Local Protection

APPENDIX B
Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Petaluma River, Petaluma, CA	1997		2003	Local Protection
Pine River Dam, MN	1995		2001	Dam Safety
Portage, WI	1997		1999	Local Protection
Portugues and Bucana Rivers, PR	1975		2007	Local Protection
Pt. Leflore, MS	1985	1986	1986	Streambank Protection
Ramapo and Mahwah Rivers, Mahwah, NJ and Suffern, NY	1990		2003	Local Protection
Ray Roberts Lake, TX	1975	1987	1999	Reservoir
Redbank & Fancher Creeks, CA	1987	1993	1994	Reservoir
Red River Basin Chloride Control (Area X) OK and TX	1991		Indefinite	Chloride Control
Red River Below Denison Dam	1948		1995	Levee & Streambank Protection
Red River of the North Fargo Public Facilities, ND (Sec 14)	2000		2002	Streambank Protection
Reno Flood Warning System, NV (Sec 205)	1998		2002	Local Protection
Richmond, VA	1986	1995	1995	Local Protection
Rillito River, AZ	1994		Indefinite	Local Protection
Rio de LaPlata, PR	1995		2009	Local Protection
Rio Grande De Manati, PR	2001		2003	Local Protection
Rio Puerto Neuvo, PR	1994		2014	Local Protection
Roanoke River, Upper Basin, VA	1990		2010	Local Protection
Rouge River, Southfield, MI (Sec 14)	2000		2002	Streambank Protection
Roughan's Point, Revere, MA	1997	1999	2002	Local Protection
Running Slough Ditch	1990	1990	1990	Streambank Protection
Sacramento River Bank Protection, CA	1963		Indefinite	Local Protection
Sacramento River, Chico Landing to Red Bluff, CA	1963		Indefinite	Local Protection
Sacramento River Flood Control, CA	1918		Indefinite	Local Protection

APPENDIX B
Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Sacramento River Flood Control – GCID, CA	1998		Undetermined	Bank Stabilization
Sacramento Urban Area Levee Reconstruction, CA	1990	1997	1997	Local Protection
Salinas River, San Ardo, CA	1993		1993	Streambank Protection
San Antonio Channel Improvement, TX	1957		2002	Local Protection
San Isidro Rd, Santa Fe, NM (Sec 14)	2000		2001	Streambank Protection
San Luis Rey River, CA	1988		Indefinite	Local Protection
San Lorenzo River, CA	1999		Undetermined	Streambank Protection
San Pedro Creek, Pacifica, CA (Sec 205)	1998		2003	Local Protection
Santa Ana River Mainstem, CA	1990		Undetermined	Local Protection
Santa Paula Creek, CA	1973		Undetermined	Local Protection
Santree Dam, SC (Sec 14)	1995	1995	1995	Streambank Protection
Sardis, Monroe Co, OH (Sec 14)	2000	2000	2000	Streambank Protection
Savan Gut, VI (Sec 205)	1987	1989	2001	Local Protection
Saylorville Lake, IA	1965	1977	1996	Reservoir
Sheyenne River, ND	1990		2003	Local Protection
Shore Drive, Singleton Swash, SC	1999	1999	1999	Local Protection
Sicily Island, LA, Levee	1983		2003	Local Protection
Sidney, NE (Sec 205)	1993	1994	1995	Local Protection
Sims Bayou, TX	1990		2009	Local Protection
Skyrocket Creek, Quray, Co (Sec 14)	1998		1999	Streambank Protection
Sodus Point Lighthouse, NY (Sec 14)	2000		2001	Streambank Protection
Souris River Basin, ND	1985		1998	Reservoir
Southeast Louisiana	1997		2007	Urban Flood Control
Springbrook Creek, PA	1989	1990	1990	Streambank Protection

APPENDIX B
Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
State Route A, Scotland Co., MO	2001	2002	2002	Streambank Protection
Steele Bayou, MS	1966		2003	Local Protection
Ste. Genevieve, MO	1995		2006	Local Protection
St. Francis Basin	1938		2007	Tributary Levees & Channels
Stillwater, MN	1996		2001	Local Protection
St. Johns Bayou- New Madrid Floodway, MO	1997		2007	Rural Urban Flood Control
Stockton Metropolitan Area, 211 Reimbursement, CA	1986		1999	Local Protection
Sugar Creek, Bellbrook, OH (Sec 205)	1996	1997	2002	Local Protection
Swan Creek, Taney County, MO (Sec 14)	1984	1986	1986	Streambank Protection
Ted Rhodes Golf Course, Nashville, TN	1995	1995	1995	Local Protection
Tehama, CA (Sec 205)	1999		2004	Local Protection
Tensas Cocodrie Pumping Plant, LA	1983	1987	1996	Local Protection
Tensas Cocodrie, LA, Levee ([5])	1974		Indefinite[4]	Local Protection; Complete
Teton River near Choteau, Teton County, MT (Sec 14)	1992	1993	1993	Streambank Protection
Texas Flat Road, Kiln, MS	2000	2000	2001	Shoreline Protection
Thurman to Hamburg, IA	1996		1997	Local Protection
Tombigbee River Tributaries, AL and MS	1965	1990	Unscheduled	Local Protection
Tongue River, State Park, Ranchester, WY (Sec 14)	1993	1994	1994	Streambank Protection
Town Brook, Quincy, MA	1992		2002	Local Protection
Tropicana and Flamingo Washes, NV	1995		Undetermined	Local Protection
Tulsa and West Tulsa, OK	1943	1945	1993	Rehabilitation of Levee System
Turkey Creek, Sumter County, SC	1999	2001	2001	Local Protection
Turtle Creek, PA	1995		1997	Local Protection
Tygart Lake, WV	1996		2001	Dam Safety Assurance

APPENDIX B
Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Upper Gordon Creek, Hattiesburg, MS	1993	1995	2001	Channel Improvement
Upper Jordan River, UT	1994		Indefinite	Local Protection
Upper Sacramento Area Levee Reconstruction, CA	1997		2003	Local Protection
Upper Scioto River, Marion County, OH (Sec 205)	1986		1987	Local Protection
Upper Yazoo Projects, MS	1976		2011	Local Protection
Van Bibber Creek, CO (Sec 205)	1995		2004	Local Protection
Village Creek, AL	1989	1996	Unscheduled	Local Protection
Wabash River, New Harmony, IN	2001		2002	Local Protection
Walnut Canyon, CA (Sec 14)	1994	1995	1998	Local Protection
Walnut Creek, CA	1964		1997	Local Protection
Water Resource Institute Lake Michigan, MI (Sec 14)	2001		2002	Streambank Protection
Westbank and Vicinity, New Orleans, LA	1991		2014	Local Protection
West Columbus, OH	1993		2004	Local Protection
West Creek, Topeka (Sec 14)	1997		2001	Streambank Protection
West Fork, Grand River, Rte H (Sec 14)	1997		2000	Streambank Protection
West Fork, Grand River, Rte W (Sec 14)	1998		2000	Streambank Protection
West Hill Dam, MA	2001		2003	Major Rehabilitation
West Ray, Marshall, PA (Sec 14)	1990	1990	1990	Streambank Protection
West Sacramento, CA	1996		2002	Local Protection
West Tennessee Tributaries	1960		Indefinite [1]	Drainage and Flood Control
Wheeler Creek, Gainesville, TX (Sec 205)	1983	1994	1984	Local Protection
White River, Batesville, AR (Sec 205)	1005	1996	1999	Local Protection
White River, Jacksonport, AR (Sec 205)	1996	1996	1998	Local Protection
White River, Indianapolis Central, Waterfront, IN	1995		2002	Local Protection

APPENDIX B
Flood Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
White River, Indianapolis North, IN	2001		2005	Local Protection
Whiteman's Creek, AR	1994	1999	1999	Local Protection
Wildcat and San Pablo Creeks, CA	1980		1996	Local Protection
Williamsport, PA (Hagerman's Run)	2001		2003	Local Protection
Wood River, NE	1996		2003	Local Protection
Wyoming Valley Levee Raising	1996		2003	Local Protection
Yalobusha River Mile 7.5, MS	1993	1993	1993	Streambank Protection
Yellowstone River, Livingston, MT (Sec 14)	1992	1993	1993	Streambank Protection

APPENDIX B
Flood Control Projects Under Construction
During Fiscal Year 2001

[1] Construction of further channel improvement was halted in 1987 due to the denial of water quality certification.

[2] Project was in useful operation before Corps started working on it. Work consists primarily of improvements to existing channels, levees, pumping stations and other flood control structures.

[3] Environmental and Recreational separable elements unprogrammed.

[4] Levee enlargement remains to be accomplished for 0.8 miles.

[5] Awaiting financial completion. Requires a correction in the financial management system.

[6] Completion of project depended upon the receipt of adequate funding.

[7] Landscaping remains to be accomplished.

[8] Recreation contract award is unscheduled.

[9] This completion schedule is for the Grand Prairie Region separable element only.

[10] Section 317 of WRDA 1999 directed the Corps to reimburse the State of Idaho for 65% of the third lowest portion of the project.

APPENDIX B
Beach Erosion Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion
Assateague Island, MD	2001		2006[4]
Atlantic Coast of Maryland	1990	1994	2044
Brevard County, FL	2000		2044
Brigantine Inlet to Great Egg Harbor Inlet (Absecon Island, NJ)	2000		TBD
Broward County, FL	1965		2031
Brunswick County Beaches, Ocean Isle Beach Portion, NC	2000	2001	2053
Delaware Coast Protection, DE	1989	1990	2028
Cape May Inlet to Lower Twp, NJ	1990	1991	2042
Carlsbab Seawall, CA (Sec 103)	1996	1997	1997
Carolina Beach and Vicinity, NC – Area South	1995	1998	2047
Carolina Beach and Vicinity, NC – Carolina Beach Portion	1965	1982	2014
Casino Beach, IL	1995		Indefinite
Castle Pinckney, SC	1999		2000
Dade County, FL	1975		2038
Delaware Coast from Cape Henlopen to Fedwick Island, DE (Dewey/Rehoboth Beach, DE)	2000		TBD
Duval County, FL	1976		2028
Emeryville, Alameda, CA (Sec 103)	1993	1993	1993
Fort Pierce Beach, FL	1998		2020
Graveline Bayou East, Jackson Co., MS	2001		2002
Great Egg Harbor Inlet & Peck Beach, NJ	1991	1992	2043
Hunting Island, SC	1999	1999	1999
Lincoln Park Beach, Seattle, WA (Sec 103)	1984	1989	2002[4]
Manatee County, FL	1992		2042

APPENDIX B
Beach Erosion Control Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion
Martin County, FL	1994		2046
Palm Beach County, FL	1962		2048
Panama City Beaches, FL	1997		2000
Pinellas County, FL (Long Key)	1969		2043
Point Beach, Milford, CT (Sec 103)	2001		2004
Presque Isle Peninsula, PA (Permanent)	1990	1993	2042 [3]
Raritan Bay and Sandy Hook Bay, NJ	1973		2018
Sarasota County, FL	1994		2046
St. Johns County, FL	1986		2046
Surfside-Sunset and Newport Beach (Orange County), CA	2000		Indefinite
Townsend Inlet to Cape May Inlet, NJ	2001		TBD
Tybee Island, GA	1975	1976	2024
Virginia Beach, VA (Reimbursement)	1962	1962	2012[2]
Virginia Beach, VA	1996		2051
Wrightsville Beach, NC	1965	1966	Indefinite

APPENDIX B
Beach Erosion Control Projects Under Construction During Fiscal Year 2001

[1] Emergency Repairs due to Hurricane Andrew as per FY 92 Dire Emergency Act authorization. Original authorized project completed in 1991.

[2] IAW Section 355 of WRDA 1996, the project will be extended until the earlier part of year 2012 or completion of the beach erosion control and hurricane Protection project at Virginia Beach, Virginia.

[3] Fiscal year 1997 was the fifth year of 50 years of nourishment.

[4] Reflects completion of short-term restoration. Long-term restoration is scheduled for completion in 2028.

APPENDIX B
Environmental Restoration Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Amazon Creek Wetlands Restoration, OR (Sec 1135)	1999		2001	Environmental Restoration
Anacostia River & Tributaries, MD & DC	1999		2002	Environmental Restoration
Barataria Bay Marsh Creation, LA (CWPPRA)	1996	1996	2000	Environmental Restoration
Battery Island Bird Habitat Preservation, NC (Sec 204)	1999	2000	2000	Environmental Restoration
Black Fox, Murfree, and Oakland Spings	2001		2003	Ecosystem Restoration
Boone, NC	2001		2002	Aquatic Ecosystem Restoration
Cape Fear L&D No. 1 Fish Ladder, NC (Sec 1135)	1996	1997	2001	Environmental Restoration
Central and Southern, FL	1950		Indefinite	Environmental Restoration
Chesapeake Bay Environmental Program (Sec 510)	2001		2004	Environmental Restoration
Chesapeake Bay Oyster Recovery, MD	1997		2007	Environmental Restoration
Clatskanie River, OR	2000	2000	2001	Environmental Restoration
Columbia River Fish Mitigation, OR & WA	1988		Undetermined	Environmental Restoration
Dead Lake, AL	1998		1998	Environmental Restoration
Everglades & South Florida Ecosystem	1998		2005	Environmental Restoration
Falls of Ohio, Wetlands & Fishery, IN (Sec 1135)	2000		2001	Environmental Restoration
Fern Ridge Lake Marsh Restoration, OR (Sec 1135)	1999		2001	Environmental Restoration
Fox Creek, OR (Sec 1135)	2001		2002	Environmental Restoration
Goldsborough Creek, WA (Sec 206)	2000		2002	Aquatic Ecosystem Restoration
Gunderson Pond Restoration, CA (Sec 1135)	2000		2005	Environmental Restoration
Hidden Lake Restoration, NE	1996		2002	Environmental Restoration
Howard A. Hanson Dam, WA (Sec 1135)	2001		2002	Environmental Restoration
Kissimmee River, FL	1989		2010	Environmental Restoration
Ladd Marsh, OR	1999		2001	Environmental Restoration
Lake Seminole Habitat, FL	1998		1999	Environmental Restoration
Lower Snake Fish & Wildlife Comp	1979		Undetermined	Environmental Restoration

APPENDIX B
Environmental Restoration Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Millcreek-Milan Bottoms (Sec 1135)	1999		2003	Environmental Restoration
Miller Corner, SC	1999		2000	Environmental Restoration
Milton Freewater, OR	1999		2001	Environmental Restoration
Missouri River Bank Stabilization & Navigation Project, NE	1992	1995	2000	Environmental Restoration
Monroe Lake Wetland, IN (Sec 1135)	1999		2001	Environmental Restoration
Morgan Point Bendway Closure Structure, AR (Sec 1135)	1995	1999	1999	Environmental Restoration
MRGO Back Dike Marsh Protection, LA (CWPPRA)	1999	1999	1999	Environmental Restoration
Murphy's Slough, CA (Sec 1135)	1998		2001	Environmental Restoration
Nathan's Lake/Mud Lake Deer Creek, NE (Sec 206)	2000		2003	Aquatic Ecosystem Restoration
Nimrod Fisheries Restoration, AR (Sec 1135)	1999	1999	1999	Environmental Restoration
North Fork Feather River, Chester, CA (Sec 1135)	1994	1995	2001	Environmental Restoration
Numana Dam, CA (Sec 1135)	1998		Unscheduled	Environmental Restoration
Oquawka Refuge (Sec 1135)	1998		2003	Environmental Restoration
Piedmont Lake Reclamation Project, OH (Sec 1135)	2001		2002	Environmental Restoration
Pine Flat Bypass, CA (Sec 1135)	1998		2002	Environmental Restoration
Pool 8, Pilot Drawdown, WI	2000		2001	Environmental Restoration
Poplar Island, MD	1998		2014	Environmental Restoration
Putah Creek, South Fork, CA	1999		2004	Environmental Restoration
Sagamore Marsh, Cape Cod Canal, MA (Sec 1135)	2000	2001	2002	Environmental Restoration
Salmon River, Challis, ID	1999		2003	Environmental Restoration
Sea Turtle Habitat Restoration, Oak Island, NC (Sec 1135)	2000	2001	2003	Environmental Restoration
Simmons Fieldcontrol Structure, AR (Sec 1135)	1998		1999	Environmental Restoration
So. & Eastern KY (Allen, KY) Sewer Construction	1998	1999	1999	Environmental Restoration
So. & Eastern KY (Sally Stevens, KY) Sewer Collection System	1999	2000	2000	Environmental Restoration
So. WV (Gilbert, WV) Sewage Treatment Plant	1998	1999	1999	Environmental Restoration
So. WV (Mercer Co) Water Distribution System	1998	2000	2000	Environmental Restoration

APPENDIX B
Environmental Restoration Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
South Central Pennsylvania Environmental Improvement Program	1996		2004	Environmental Restoration
South Fork, Putah Creek, CA (Sec 1135)	1998		2001	Environmental Restoration
Tucson (Ajo) Detention Basin Wetlands, AZ (Sec 1135)	2000		2003	Environmental Restoration
Turning Basin #3, Seattle WA (Sec 1135)	1999		2001	Environmental Restoration
Upper Central Platte Valley, Colfax Reach, NE (Sec 1135)	2000		2003	Environmental Restoration
Upper Grande Ronde, OR	1997		2002	Environmental Restoration
Vic Fazio Yolo Wildlife Area, CA (Sec 1135)	1992	1999	2002	Environmental Restoration
Walla Walla River, OR	1994		2001	Environmental Restoration
Wehrspann Lake Aquatic Habitat Control, NE	1999		2004	Environmental Restoration
Willamette River Temperature Control (Cougar Project), OR	2000		2004	Environmental Restoration

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Length	Lift	Depth over Sills Unit in Feet Upper	Lower	Gate Type	Dam Unit in Feet Length *	Year Open
AIWW Between Norfolk, VA & St. Johns River, FL											
Great Bridge	Albemarle & Chesapeake Canal	12.2	Chesapeake, VA	72	530	3	16	16	Miter	NA	1932
Deep Creek	Dismal Swamp Canal	10.6	Chesapeake, VA	52	300	12	12	12	Miter	NA	1940
South Mills	Dismal Swamp Canal	33.2	South Mills, NC	52	300	12	12	12	Miter	NA	1941
Alabama-Coosa Rivers											
Claiborne	Alabama	117.5	Claiborne, AL	84	600	30	16	13	Moveable	1603.0	1969
Millers Ferry	Alabama	178.0	Camden, AL	84	600	45	16	13	Moveable	9900.0	1969
Robert F. Henry	Alabama	281.2	Benton, AL	84	600	45	16	13	Moveable	1496.0	1972
Allegheny											
2	Allegheny	6.7	Aspinwall, PA	56	360	11	11	12	Miter	1393.0	1934
3	Allegheny	14.5	Cheswick, PA	56	360	14	12	11	Miter	1436.0	1934
4	Allegheny	24.2	Natrona, PA	56	360	11	9	10	Miter	876.0	1927
5	Allegheny	30.4	Freeport, PA	56	360	12	10	11	Miter	780.0	1927
6	Allegheny	36.3	Clinton, PA	56	360	12	11	11	Miter	1140.0	1928
7	Allegheny	45.7	Kittanning, PA	56	360	13	11	10	Miter	916.0	1930
8	Allegheny	52.6	Templeton, PA	56	360	18	14	10	Miter	984.0	1931
9	Allegheny	62.2	Rimer, PA	56	360	22	11	11	Miter	950.0	1938
Apalachicola, Chattahoochee, and Flint Rivers											
Jim Woodruff	Apalachicola	106.3	Chattahoochee, FL	82	450	33	14	14	Moveable	6359.0	1954
George W. Andrews	Chattahoochee	46.7	Gordon, GA	82	450	25	19	13	Moveable	750.0	1962
Walter F. George	Chattahoochee	75.1	Fort Gaines, GA	82	450	88	18	13	Moveable	1325.0	1963

* NA (Not Applicable) No Dam at Lock

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Chamber Unit in Feet Length	Chamber Unit in Feet Lift	Depth over Sills Unit in Feet Upper	Depth over Sills Unit in Feet Lower	Gate Type	Dam Unit in Feet Length *	Year Open
Bayou Teche, LA											
Keystone	Bayou Teche	72.0	New Iberia, LA	36	160	8	9	8	Miter	175.0	1913
Bayou Teche, LA (FCMR&T)											
Berwick	Atchafalaya	1.5	Berwick, LA	45	300	14	9	9	Sector	NA	1950
East & West Calumet	Bayou Teche	4.0	Berwick, LA	45	90	0	0	0	Sector	NA	1950
Charenton	Grand Lake	35.7	Charenton, LA	45	0	0	0	0	Sector	NA	1949
Black Rock Channel & Tonawanda Harbor											
Black Rock	Black Rock Canal	4.0	Buffalo, NY	70	625	5	22	22	Replaced	NA	1914
Black Warrior & Tombigbee Rivers, AL											
Armistead I. Seldon	Black Warrior	262.0	Eutaw, AL	110	600	22	13	13	Moveable	1832.0	1957
William Bacon Oliver	Black Warrior	337.6	Tuscaloosa, WA	110	600	28	18	18	Moveable	800.0	1991
Holt	Black Warrior	347.0	Holt, AL	110	600	64	19	13	Moveable	1138.0	1966
John Hollis Bankhead	Black Warrior	366.0	Adger, AL	110	600	68	13	13	Moveable	1170.0	1975
Coffeeville	Tombigbee	116.6	Coffeeville, AL	110	600	34	13	13	Moveable	1185.0	1960
Demopolis	Tombigbee	213.2	Demopolis, AL	110	600	40	13	13	Moveable	1485.0	1954
Calcasieu River and Pass, LA											
Calcasieu Barrier	Calcasieu River	38.9	West Lake, LA	56	575	0	0	0	Sector	450.0	1968
Canaveral Harbor											
Canaveral	Canaveral Barge Canal	3.0	Cape Canaveral, FL	90	600	3	13	13	Sector	NA	1965

* NA (Not Applicable) No Dam at Lock

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Chamber Unit in Feet Length	Chamber Unit in Feet Lift	Depth over Sills Unit in Feet Upper	Depth over Sills Unit in Feet Lower	Gate Type	Dam Unit in Feet Length *	Year Open
Cape Fear River											
1	Cape Fear	39.0	Kings Bluff, NC	40	200	11	9	9	Miter	275.0	1915
2	Cape Fear	71.0	Browns Landing, NC	40	200	9	12	12	Miter	229.0	1917
William O. Huske	Cape Fear	95.0	Tolars Landing, NC	40	300	9	9	9	Miter	220.0	1935
Chicago Harbor											
Chicago	Chicago River	327.2	Chicago, IL	80	600	4	27	23	Sector	NA	1939
Colorado River											
Colorado River East	GIWW Texas	441.1	Matagorda, TX	75	1180	12	15	15	Sector	520.0	1944
Colorado River West	GIWW Texas	441.8	Matagorda, TX	75	1180	12	15	15	Replaced	520.0	1944
Columbia River											
Bonneville	Columbia	145.3	Cascade Locks, OR	86	650	65	19	24	Miter	2680.0	1993
The Dalles	Columbia	191.7	The Dalles, OR	86	650	88	15	15	Vertical	8735.0	1957
John Day	Columbia	216.5	Rufus, OR	86	650	110	15	15	Vertical	5900.0	1968
McNary	Columbia	292.0	Plymouth, WA	86	650	103	15	21	Miter	7365.0	1953
Cumberland River, TN & KY											
Barkley	Cumberland	30.6	Grand Rivers, KY	110	800	57	24	13	Miter	9959.0	1964
Cheatham	Cumberland	148.7	Ashland City, TN	110	798	26	14	12	Miter	801.0	1952
Old Hickory	Cumberland	216.2	Old Hickory, TN	84	397	60	14	13	Miter	3605.0	1954
Cordell Hull	Cumberland	313.5	Carthage, TN	84	400	59	14	13	Miter	1138.0	1973

* NA (Not Applicable) No Dam at Lock

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Length	Lift	Depth over Sills Unit in Feet Upper	Lower	Gate Type	Dam Unit in Feet Length *	Year Open
Fox River											
Depere	Fox	7.0	Depere, WI	36	146	9	10	12	Tainter	986.1	1856
Little Kaukauna	Fox	14.0	Depere, WI	36	146	7	8	10	Tainter	607.7	1938
Rapide Croche	Fox	19.2	Wrightstown, WI	36	146	8	9	10	Tainter	356.3	1934
Kaukauna 5	Fox	22.8	Kaukauna, WI	36	144	9	7	9	Leaf	NA	1856
Kaukauna 4	Fox	23.1	Kaukauna, WI	37	144	10	7	6	Leaf	NA	1856
Kaukauna 3	Fox	23.3	Kaukauna, WI	35	144	10	7	6	Leaf	NA	1856
Kaukauna 2	Fox	23.4	Kaukauna, WI	35	144	10	6	6	Leaf	NA	1856
Kaukauna 1	Fox	23.6	Kaukauna, WI	35	144	11	7	6	Leaf	NA	1856
Kaukauna Guard	Fox	24.0	Kaukauna, WI	40	0	9	0	0	Tainter	603.0	1891
Little Chute Lower	Fox	25.4	Little Chute, WI	35	147	11	6	9	Leaf	NA	1856
Little Chute Upper	Fox	25.4	Little Chute, WI	36	144	11	8	6	Leaf	NA	1856
Little Chute 2	Fox	26.4	Little Chute, WI	35	144	14	8	6	Leaf	NA	1881
Little Chute 1 Guard	Fox	26.5	Little Chute, WI	35	0	7	0	0	Leaf	561.6	1904
Cedars	Fox	27.3	Little Chute, WI	35	144	10	7	7	Leaf	654.3	1856
Appleton 4	Fox	30.7	Appleton, WI	35	144	8	8	8	Leaf	NA	1856
Appleton 3	Fox	31.3	Appleton, WI	35	144	9	6	9	Leaf	NA	1856
Appleton 2	Fox	31.6	Appleton, WI	35	145	10	7	6	Leaf	425.0	1856
Appleton 1	Fox	31.9	Appleton, WI	35	145	10	7	6	Leaf	691.0	1884
Menasha	Fox	38.0	Menasha, WI	34	144	9	7	8	Leaf	400.5	1856
Freshwater Bayou, LA											
Freshwater Bayou	Freshwater Bayou	1.2	Intracoastal City, LA	84	590	4	16	16	Sector	401.0	1968

* NA (Not Applicable) No Dam at Lock

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Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Chamber Unit in Feet Length	Chamber Unit in Feet Lift	Depth over Sills Unit in Feet Upper	Depth over Sills Unit in Feet Lower	Gate Type	Dam Unit in Feet Length *	Year Open
GIWW Between Apalachee Bay, FL & Mexican Border											
Bayou Boeuf	GIWW	93.3	Morgan City, LA	75	1148	11	13	13	Sector	NA	1954
Leland Bowman	GIWW	162.7	Abbeville, LA	110	1190	5	11	11	Sector	NA	1985
Calcasieu	GIWW	238.5	Lake Charles, LA	75	1194	4	13	13	Sector	NA	1950
Algiers	GIWW Algiers Canal	0.0	Algiers, LA	75	760	18	13	13	Sector	NA	1956
Inner Harbor Navigation Canal	GIWW East	7.0	New Orleans, LA	75	626	17	31	31	Miter	NA	1923
Bayou Sorrel	GIWW Port Allen-Morgan City Alt.	37.5	Plaquemine, LA	56	790	21	14	14	Sector	NA	1952
Port Allen	GIWW Port Allen-Morgan City Alt.	64.1	Port Allen, LA	84	1188	45	13	14	Miter	NA	1961
Brazos East	GIWW Texas	400.8	Freeport, TX	75	750	0	15	15	Sector	520.0	1943
Brazos West	GIWW Texas	401.1	Freeport, TX	75	750	0	15	15	Sector	520.0	1943
Harvey	GIWW West	0.0	Harvey, LA	75	415	20	12	12	Miter	NA	1935
Green and Barren Rivers,KY											
1	Green	9.1	Spottsville, KY	84	600	8	12	15	Miter	760.0	1956
2	Green	63.1	Calhoun, KY	84	600	14	12	12	Miter	512.0	1956
3	Green	108.5	Rochester, KY	36	138	17	0	0	Miter	NA	1836
4	Green	149.0	Woodbury, KY	36	138	16	0	0	Replaced	NA	1836
Hudson River											
Troy	Hudson	153.8	Troy, NY	45	493	17	16	13	Fixed	1495.0	1916

* NA (Not Applicable) No Dam at Lock

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Length	Lift	Depth over Sills Unit in Feet Upper	Lower	Gate Type	Dam Unit in Feet Length *	Year Open
Illinois Waterway											
Thomas J. O'Brien	Calumet	326.5	Chicago, IL	110	1000	4	18	18	Sector	257.0	1960
Lagrange	Illinois	80.2	Beardstown, IL	110	600	10	16	13	Miter	1066.0	1939
Peoria	Illinois	157.7	Creve Coeur, IL	110	600	11	15	12	Miter	3446.0	1938
Starved Rock	Illinois	231.0	Utica, IL	110	600	19	17	14	Miter	1280.0	1933
Marseilles	Illinois	244.6	Marseilles, IL	110	600	24	19	14	Miter	778.5	1933
Dresden Island	Illinois	271.5	Morris, IL	110	600	22	17	12	Miter	1615.5	1933
Brandon Road	Illinois	286.0	Joliet, IL	110	600	34	18	14	Miter	2373.0	1933
Lockport	Illinois	291.1	Lockport, IL	110	600	40	20	15	Miter	500.0	1933
Kanawha Lock & Dam, Washington											
Winfield	Kanawha	31.1	Winfield, WV	56	360	28	18	12	Miter	700.0	1937
	Kanawha	31.1	Winfield, WV	110	800	28	18	18	Miter	700.0	1997
	Kanawha	31.1	Winfield, WV	56	360	28	18	12	Miter	700.0	1937
Marmet	Kanawha	67.7	Marmet, WV	56	360	24	18	12	Miter	557.0	1934
	Kanawha	67.7	Marmet, WV	56	360	24	18	12	Miter	557.0	1934
London	Kanawha	82.8	London, WV	56	360	24	18	12	Miter	557.0	1934
	Kanawha	82.8	London, WV	56	360	24	18	12	Miter	557.0	1933
Kaskaskia River											
Kaskaskia	Kaskaskia	0.8	Modoc, IL	84	600	29	19	11	Miter	120.0	1973

* NA (Not Applicable) No Dam at Lock

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Length	Lift	Depth over Sills Unit in Feet Upper	Lower	Gate Type	Dam Unit in Feet Length *	Year Open
Kentucky River, KY											
1	Kentucky	4.0	Carrollton, KY	38	145	8	8	15	Miter	424.0	1839
2	Kentucky	31.0	Lockport, KY	38	145	14	8	6	Fixed	400.0	1839
3	Kentucky	42.0	Gest, KY	38	145	13	9	6	Miter	465.0	1844
4	Kentucky	65.0	Frankfort, KY	38	145	13	6	7	Fixed	534.0	1844
5	Kentucky	82.2	Tyrone, KY	38	145	15	10	6	Fixed	556.0	1844
6	Kentucky	96.2	High Bridge, KY	52	147	14	9	6	Fixed	413.0	1891
7	Kentucky	117.0	High Bridge, KY	52	147	15	9	7	Fixed	350.0	1897
8	Kentucky	139.9	Camp Nelson, KY	52	146	19	11	6	Fixed	257.0	1900
9	Kentucky	157.5	Valley View, KY	52	148	17	11	7	Fixed	362.0	1907
10	Kentucky	176.4	Ford, KY	52	148	17	9	6	Fixed	472.0	1907
11	Kentucky	201.0	Irvine, KY	52	148	18	10	6	Fixed	208.0	1906
12	Kentucky	220.9	Ravenna, KY	52	148	17	10	6	Fixed	240.0	1973
13	Kentucky	239.9	Willow, KY	52	148	18	10	6	Fixed	248.0	1915
14	Kentucky	249.0	Heidelberg, KY	52	148	17	9	6	Fixed	248.0	1917
Lake Washington Ship Canal											
Hiram M. Chittenden	Lake Washington Ship Canal	0.0	Seattle, WA	80	760	26	36	29	Miter	235.0	1916
	Lake Washington Ship Canal	0.0	Seattle, WA	28	123	26	16	16	Miter	235.0	1916

* NA (Not Applicable) No Dam at Lock

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Length	Lift	Depth over Sills Unit in Feet Upper	Lower	Gate Type	Dam Unit in Feet Length *	Year Open
McClellan-Kerr Arkansas River Navigation System											
Norrell	Arkansas	10.3	Arkansas Post, AR	110	600	30	16	15	Fixed	277.0	1967
2	Arkansas	13.3	Arkansas Post, AR	110	600	20	18	14	Tainter	1120.0	1967
Joe Hardin	Arkansas	50.2	Grady, AR	110	600	20	18	14	Tainter	1260.0	1968
Emmett Sanders	Arkansas	66.0	Pine Bluff, AR	110	600	14	18	14	Tainter	1190.0	1968
5	Arkansas	86.3	Redfield, AR	110	600	17	18	14	Tainter	1050.0	1968
David D. Terry	Arkansas	108.1	Little Rock, AR	110	600	18	18	14	Tainter	1190.0	1968
Murray	Arkansas	125.4	Little Rock, AR	110	600	18	18	14	Tainter	980.0	1969
Toad Suck Ferry	Arkansas	155.9	Conway, AR	110	600	16	18	14	Tainter	1200.0	1969
Arthur V. Ormond	Arkansas	176.9	Morrilton, AR	110	600	19	18	14	Tainter	1797.0	1969
Dardanelle	Arkansas	205.5	Russellville, AR	110	600	55	18	14	Tainter	1210.0	1969
Ozark - Jeta Taylor	Arkansas	256.8	Ozark, AR	110	600	34	18	15	Tainter	900.0	1969
James W. Trimble	Arkansas	292.8	Fort Smith, AR	110	600	20	18	14	Tainter	1050.0	1969
W.D. Mayo	Arkansas	319.6	Spiro, OK	110	600	21	14	14	Moveable	840.0	1970
Robert S. Kerr	Arkansas	336.2	Salisaw, OK	110	600	48	16	14	Moveable	1090.0	1970
Webbers Falls	Arkansas	366.6	Webbers Falls, OK	110	600	30	16	14	Moveable	720.0	1970
Chouteau	Verdigris	5.0	Muskogee, OK	110	600	21	15	14	Moveable	210.0	1970
Newt Graham Lock	Verdigris	26.0	Inola, OK	110	600	21	15	14	Moveable	210.0	1970
Mermentau River, LA											
Schooner Bayou	Inland Ww, Franklin-Mermentau	3.4	Abbeville, LA	75	525	0	0	0	Sector	NA	1950
Catfish Point	Mermentau	25.0	Creole, LA	56	500	0	0	0	Sector	NA	1951

* NA (Not Applicable) No Dam at Lock

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Length	Lift	Depth over Sills Unit in Feet Upper	Lower	Gate Type	Dam Unit in Feet Length *	Year Open
Mississippi R between Missouri R & Minneapolis, MN											
Melvin Price	Mississippi	200.8	East Alton, IL	110	1200	24	23	18	Vertical	990.0	1990
	Mississippi	200.8	East Alton, IL	110	600	24	42	18	Miter	990.0	1994
25	Mississippi	241.4	Winfield, MO	110	600	15	19	12	Miter	1140.0	1939
24	Mississippi	273.4	Clarksville, MO	110	600	15	19	12	Miter	1200.0	1940
22	Mississippi	301.2	Saverton, MO	110	600	10	18	14	Miter	3084.0	1938
21	Mississippi	324.9	Quincy, IL	110	600	10	17	12	Moveable	2955.0	1938
20	Mississippi	343.2	Canton, MO	110	600	10	15	12	Moveable	2144.0	1936
19	Mississippi	364.2	Keokuk, IA	110	1200	38	15	13	Fixed	8809.0	1957
18	Mississippi	410.5	Gladstone, IL	110	600	10	17	14	Moveable	6960.0	1937
17	Mississippi	437.1	New Boston, IL	110	600	8	16	13	Moveable	3196.0	1939
16	Mississippi	457.2	Muscatine, IL	110	600	9	17	12	Moveable	3555.0	1937
15	Mississippi	482.9	Rock Island, IL	110	360	16	27	11	Moveable	1203.0	1934
	Mississippi	482.9	Rock Island, IL	110	600	16	27	11	Moveable	1203.0	1934
14	Mississippi	493.0	Leclaire, IA	110	600	11	18	11	Moveable	2703.0	1939
	Mississippi	493.0	Leclaire, IA	80	320	11	21	14	Moveable	2703.0	1922
13	Mississippi	523.0	Clinton, IL	110	600	11	19	13	Moveable	1407.0	1938
12	Mississippi	556.0	Bellevue, IA	110	600	9	17	13	Moveable	8369.0	1938
11	Mississippi	583.0	Dubuque, IA	110	600	11	19	13	Moveable	4784.0	1937
10	Mississippi	615.1	Guttenburg, IA	110	600	8	15	12	Miter	763.0	1936
9	Mississippi	647.9	Lynxville, WI	110	600	9	16	13	Miter	811.0	1938
8	Mississippi	679.2	Genoa, WI	110	600	11	22	14	Miter	935.0	1937
7	Mississippi	702.5	Dresbach, MN	110	600	8	18	12	Miter	940.0	1937
6	Mississippi	714.3	Trempealeau, WI	110	600	6	17	13	Miter	893.0	1936

* NA (Not Applicable) No Dam at Lock

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Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Chamber Unit in Feet Length	Chamber Unit in Feet Lift	Depth over Sills Unit in Feet Upper	Depth over Sills Unit in Feet Lower	Gate Type	Dam Unit in Feet Length *	Year Open
5A	Mississippi	728.5	Winona, MN	110	600	5	18	13	Miter	682.0	1936
5	Mississippi	738.1	Minneiska, MN	110	600	9	18	12	Miter	1619.0	1935
4	Mississippi	752.8	Alma, WI	110	600	7	17	13	Miter	1367.0	1935
3	Mississippi	796.9	Red Wing, MN	110	600	8	17	14	Miter	365.0	1938
2	Mississippi	815.2	Hastings, MN	110	500	12	22	13	Miter	822.0	1930
1	Mississippi	847.6	Minn. St. Paul, MN	56	400	38	13	10	Miter	574.0	1932
	Mississippi	847.6	Minn. St. Paul, MN	56	400	38	13	8	Miter	574.0	1930
Lower Saint Anthony Falls	Mississippi	853.3	Minneapolis, MN	56	400	25	14	10	Miter	188.0	1959
Upper Saint Anthony Falls	Mississippi	853.9	Minneapolis, MN	56	400	49	16	14	Miter	NA	1963
Mississippi R between Ohio and Missouri Rivers											
27	Mississippi	185.5	Granite City, IL	110	1200	21	15	15	Vertical	3000.0	1953
	Mississippi	185.5	Granite City, IL	110	600	21	15	15	Miter	3000.0	1953

* NA (Not Applicable) No Dam at Lock

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Length	Lift	Depth over Sills Unit in Feet Upper	Lower	Gate Type	Dam Unit in Feet Length *	Year Open
Monongahela River											
2	Monongahela	11.2	Braddock, PA	56	360	9	15	16	Miter	748.0	1905
	Monongahela	11.2	Braddock, PA	110	720	9	15	16	Miter	748.0	1905
3	Monongahela	23.8	Elizabeth, PA	56	720	8	11	11	Miter	670.0	1907
	Monongahela	23.8	Elizabeth, PA	56	360	8	11	11	Miter	670.0	1907
4	Monongahela	41.5	Monessen, PA	56	720	17	20	10	Miter	535.0	1932
	Monongahela	41.5	Monessen, PA	56	360	17	20	10	Miter	535.0	1932
Maxwell	Monongahela	61.2	Maxwell, PA	84	720	20	20	14	Miter	460.0	1963
	Monongahela	61.2	Maxwell, PA	84	720	20	20	14	Miter	460.0	1963
Grays Landing	Monongahela	82.0	Grays Landing, PA	84	720	15	27	18	Miter	576.0	1993
Point Marion	Monongahela	90.8	Point Marion, PA	84	720	19	16	35	Miter	682.0	1994
Morgantown	Monongahela	102.0	Morgantown, WV	84	600	17	17	14	Miter	410.0	1950
Hildebrand	Monongahela	108.0	Morgantown, WV	84	600	21	14	15	Miter	530.0	1959
Opekiska	Monongahela	115.4	Opekiska, WV	84	600	22	18	14	Miter	366.01964*	NA (Not

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Length	Lift	Depth over Sills Unit in Feet Upper	Lower	Gate Type	Dam Unit in Feet Length *	Year Open
Ohio River											
Emsworth	Ohio	6.2	Emsworth, PA	56	360	18	16	13	Miter	1717.0	1921
	Ohio	6.2	Emsworth, PA	110	600	18	17	13	Miter	1717.0	1921
Dashields	Ohio	13.3	Glenwillard, PA	110	600	10	13	18	Miter	1585.0	1929
	Ohio	13.3	Glenwillard, PA	56	360	10	13	18	Miter	1585.0	1929
Montgomery	Ohio	31.7	Monaca, PA	56	360	18	16	15	Miter	1379.0	1936
	Ohio	31.7	Monaca, PA	110	600	18	16	15	Miter	1379.0	1936
New Cumberland	Ohio	54.4	Stratton, OH	110	600	21	17	15	Miter	1315.0	1959
	Ohio	54.4	Stratton, OH	110	1200	21	17	15	Miter	1315.0	1959
Pike Island	Ohio	84.2	Warwood, WV	110	1200	18	17	18	Miter	1315.0	1965
	Ohio	84.2	Warwood, WV	110	600	18	17	18	Miter	1315.0	1965
Hannibal	Ohio	126.4	Hannibal, OH	110	600	21	38	17	Miter	1098.0	1973
	Ohio	126.4	Hannibal, OH	110	1200	21	38	17	Miter	1098.0	1973
Willow Island	Ohio	161.7	Newport, OH	110	600	20	35	15	Miter	1128.0	1972
	Ohio	161.7	Newport, OH	110	1200	20	35	15	Miter	1128.0	1972
Belleville	Ohio	203.9	Reedsville, OH	110	1200	22	37	15	Miter	1206.0	1969
	Ohio	203.9	Reedsville, OH	110	600	22	37	15	Miter	1206.0	1969
Racine	Ohio	237.5	Letart, WV	110	600	22	37	15	Miter	1173.0	1969
	Ohio	237.5	Letart, WV	110	1200	22	37	15	Miter	1173.0	1969
Robert C. Byrd	Ohio	279.2	Hogsett, WV	110	1200	23	41	18	Miter	1132.0	1993
	Ohio	279.2	Hogsett, WV	110	600	23	41	18	Miter	1132.0	1993
Greenup	Ohio	341.0	Greenup, KY	110	600	30	45	15	Miter	1287.0	1959
	Ohio	341.0	Greenup, KY	110	1200	30	45	15	Miter	1287.0	1959
Captain Anthony Meldahl	Ohio	436.2	Chilo, OH	110	1200	30	45	15	Miter	1756.0	1962

* NA (Not Applicable) No Dam at Lock

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Length	Lift	Depth over Sills Unit in Feet Upper	Lower	Gate Type	Dam Unit in Feet Length *	Year Open	
Captain Anthony Meldahl	Ohio	436.2	Chilo, OH	110	600	30	45	15	Miter	1756.0	1962	
Markland	Ohio	531.5	Warsaw, KY	110	1200	35	50	15	Miter	1395.0	1959	
	Ohio	531.5	Markland, KY	110	600	35	50	15	Miter	1395.0	1959	
Mcalpine	Ohio	606.8	Louisville, KY	110	1200	37	49	12	Miter	8725.0	1961	
	Ohio	606.8	Louisville, KY	110	600	37	19	11	Miter	8725.0	1961	
Cannelton	Ohio	720.7	Cannelton, IN	110	1200	25	40	15	Miter	2054.0	1971	
	Ohio	720.7	Cannelton, IN	110	600	25	40	15	Miter	2054.0	1971	
Newburgh	Ohio	776.1	Newburgh, IN	110	1200	16	31	15	Miter	2275.6	1975	
	Ohio	776.1	Newburgh, IN	110	600	16	31	15	Miter	2275.6	1975	
John T. Myers	Ohio	846.0	Mount Vernon, IN	110	1200	18	34	16	Miter	3504.0	1975	
	Ohio	846.0	Mount Vernon, IN	110	600	18	34	16	Miter	3504.0	1975	
Smithland	Ohio	918.5	Hamletsburg, IL	110	1200	22	34	12	Miter	2962.0	1980	
	Ohio	918.5	Hamletsburg, IL	110	1200	22	34	12	Miter	2962.0	1980	
52	Ohio	938.9	Brookport, IL	110	1200	12	15	11	Miter	2998.0	1969	
	Ohio	938.9	Brookport, IL	110	600	12	15	11	Miter	2978.0	1928	
53	Ohio	962.6	Mound City, IL	110	600	12	15	10	Miter	3560.0	1929	
	Ohio	962.6	Mound City, IL	110	1200	12	15	10	Miter	3560.0	1980	
Okeechobee Waterway, FL												
Moore Haven	Caloosahatchee	78.0	Moore Haven, FL	50	250	2	10	11	Sector	89.8	1953	
W. P. Franklin	Caloosahatchee	122.0	Fort Myers, FL	56	400	3	13	13	Sector	1150.0	1965	
Ortona	Okeechobee	93.6	Labelle, FL	50	225	11	12	15	Sector	104.0	1937	
St. Lucie	St. Lucie Canal	15.3	Stuart, FL	50	225	13	15	13	Sector	170.0	1941	
Port Mayaca	St. Lucie Canal	38.5	Port Mayaca, FL	56	400	2	17	17	Sector	116.0	1977	*

NA (Not Applicable) No Dam at Lock

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Length	Lift	Depth over Sills Unit in Feet Upper	Lower	Gate Type	Dam Unit in Feet Length *	Year Open
Old River, LA (MR&T)											
Old River	Old River	1.0	Simmesport, LA	75	1190	35	11	11	Miter	1100.0	1963
Ouachita And Black Rivers Below Camden, AR											
Jonesville	Black	25.0	Jonesville, LA	84	600	30	18	15	Miter	450.0	1972
Columbia	Ouachita	117.2	Columbia, LA	84	600	18	18	18	Miter	400.0	1972
Felsenthal	Ouachita	226.8	Felsenthal, AR	84	600	18	18	13	Miter	350.0	1984
H. K. Thatcher	Ouachita	281.7	Calion, LA	84	600	12	18	13	Miter	350.0	1984
Pearl River Lateral Canal											
1	West Pearl	29.7	Pearl River, LA	65	274	27	10	10	Miter	NA	1949
2	West Pearl	40.8	Bush, LA	65	274	15	10	10	Miter	NA	1950
3	West Pearl	43.9	Sun, LA	65	274	11	10	10	Miter	NA	1950
Red River WW-Mississippi R To Shreveport, LA											
Lindy Claiborne Boggs	Red	44.0	Larto, LA	84	685	36	22	13	Miter	630.0	1984
John H.Overton	Red	74.0	Ruby, LA	84	685	24	23	23	Miter	348.0	1987
3	Red	116.4	Colfax, LA	84	685	31	25	18	Miter	432.0	1992
Russell B. Long	Red	169.0	Coushatta, LA	84	685	25	25	18	Miter	690.0	1994
Joe D. Waggonner	Red	200.0	Caspiana, LA	84	685	25	22	23	Miter	663.0	1994
Sacramento River											
Sacramento Barge Canal Lock	Sacramento	43.0	West Sacramento, CA	86	640	4	13	13	Replaced	NA	1961
Savannah River											
New Savannah Bluff	Savannah	187.2	Augusta, SC	56	360	15	14	12	Miter	360.0	1937

* NA (Not Applicable) No Dam at Lock

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Length	Lift	Depth over Sills Unit in Feet Upper	Lower	Gate Type	Dam Unit in Feet Length *	Year Open
Snake River											
Ice Harbor	Snake	9.7	Pasco, WA	86	650	103	15	14	Vertical	2790.0	1962
Lower Monumental	Snake	41.6	Kahlotus, WA	86	650	103	15	15	Vertical	3800.0	1969
Little Goose	Snake	70.3	Starbuck, WA	86	650	101	15	15	Miter	2655.0	1970
Lower Granite	Snake	107.5	Pomeroy, WA	86	650	105	15	15	Miter	3200.0	1975
St. Marys River, MI											
Davis	St Marys	47.0	Sault Ste. Marie, MI	80	1320	22	24	23	Leaf	1300.0	1914
Macarthur	St Marys	47.0	Sault Ste. Marie, MI	80	780	22	31	31	Leaf	1300.0	1943
New Poe	St Marys	47.0	Sault Ste. Marie, MI	110	1200	22	32	32	Leaf	1300.0	1963
Tennessee River, TN, AL, and KY											
Pickwick Landing	Tennessee	206.7	Pickwick Dam, TN	110	600	55	16	17	Fixed	7385.0	1937
Guntersville	Tennessee	349.0	Guntersville, AL	60	360	39	17	18	Tainter	3837.0	1937

* NA (Not Applicable) No Dam at Lock

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Length	Lift	Depth over Sills Unit in Feet Upper	Lower	Gate Type	Dam Unit in Feet Length *	Year Open
Tennessee River, TN, AL, and KY											
Melton Hill	Clinch	23.1	Kingston, TN	75	400	58	13	13	Tainter	1072.0	1963
Kentucky	Tennessee	22.4	Grand Rivers, KY	110	600	57	24	13	Miter	7976.0	1942
Pickwick Landing	Tennessee	206.7	Pickwick Dam, TN	110	1000	55	19	17	Fixed	7385.0	1984
Wilson	Tennessee	259.4	Florence, AL	60	300	45	11	11	Fixed	3728.0	1927
	Tennessee	259.4	Florence, AL	60	300	49	13	13	Miter	3728.0	1927
	Tennessee	259.4	Florence, AL	110	600	94	11	11	Fixed	3728.0	1959
General Joseph Wheeler	Tennessee	274.9	Rogersville, AL	60	400	48	15	13	Fixed	5738.0	1934
	Tennessee	274.9	Rogersville, AL	110	600	48	15	13	Fixed	5738.0	1963
Guntersville	Tennessee	349.0	Guntersville, AL	110	600	39	17	18	Miter	3837.0	1965
Nickajack	Tennessee	424.7	Jasper, TN	110	600	39	13	11	Miter	3763.0	1967
Chickamauga	Tennessee	471.0	Chattanooga, TN	60	360	49	10	14	Miter	5654.0	1937
Watts Bar	Tennessee	529.9	Breendenton, TN	60	360	58	12	12	Tainter	2646.0	1941
Fort Loudon	Tennessee	602.3	Lenoir City, TN	60	360	72	12	12	Tainter	3687.0	1943

* NA (Not Applicable) No Dam at Lock

APPENDIX C
Navigation Locks and Dams Owned or Operated September 30, 2001

Waterway/ Lock	River	River Mile	Community	Chamber Unit in Feet Width	Length	Lift	Depth over Sills Unit in Feet Upper	Lower	Gate Type	Dam Unit in Feet Length *	Year Open
Tennessee-Tombigbee Waterway AL, MS											
Howell Heflin	Tenn-Tombigbee	266.1	Gainesville, AL	110	600	36	15	15	Moveable	817.0	1978
Tom Bevill	Tenn-Tombigbee	306.8	Aliceville, AL	110	600	27	15	15	Moveable	647.0	1979
John C. Stennis	Tenn-Tombigbee	334.7	Columbus, MS	110	600	27	15	15	Moveable	573.0	1980
Aberdeen	Tenn-Tombigbee	357.5	Aberdeen, MS	110	600	27	15	15	Moveable	641.0	1985
Amory	Tenn-Tombigbee	371.1	Amory, MS	110	600	30	15	15	Moveable	284.0	1985
Glover Wilkins	Tenn-Tombigbee	376.3	Smithville, AL	110	600	25	18	18	Moveable	779.0	1985
Fulton	Tenn-Tombigbee	391.0	Fulton, MS	110	600	25	18	18	Moveable	396.0	1985
John E. Rankin	Tenn-Tombigbee	398.4	Fulton, MS	110	600	30	18	18	Moveable	282.0	1985
G.V. "Sonny" Montgomery	Tenn-Tombigbee	406.7	Belmont, MS	110	600	30	18	18	Moveable	449.0	1985
Jamie Whitten	Tenn-Tombigbee	411.9	Tupelo, MS	110	600	84	18	18	Moveable	2750.0	1985
The Inland Route, MI											
Alanson	Crooked	30.0	Alanson, MI	18	66	3	7	8	Tainter	83.0	1967
Willamette River at Willamette Falls											
Willamette Falls	Willamette	26.0	West Linn, OR	40	198	20	6	8	Leaf	NA	1873
	Willamette	26.0	West Linn, OR	40	198	10	6	8	Leaf	NA	1873
	Willamette	26.0	West Linn, OR	40	198	10	6	8	Leaf	NA	1873
	Willamette	26.0	West Linn, OR	40	198	10	6	8	Leaf	NA	1873
	Willamette	26.0	West Linn, OR	40	198	10	6	8	Leaf	NA	1873

* NA (Not Applicable) No Dam at Lock

APPENDIX D
Navigation Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Agat Small Boat Harbor, Guam (Sec 107)	1987	1989	1989	Dredging and breakwater
AIWW Replacement of Federal Hwy Bridges in NC	1974	1986 [1]	2003	Replacement of existing bridges
Aquadilla Harbor, PR (Sec 107)	1993		1995	Breakwater
Blair Waterway, Tacoma, WA (Sec 107)	1999		2001	Deepen Channel and Turning Basin
Bonneville Navigation Lock, OR & WA	1985	1993	2001	New larger lock
Boston Harbor, MA	1998	2000	2002	Channel deepening
Burns Harbor, IN	1995		1999	Breakwater Rehabilitation
Calabash Creek (Sec 107)	2000	2001	2001	Channel Deepening
Chain of Rocks Canal, IL	1999	1953	2004	Deficiency Correction
Canaveral Harbor Deepening, FL	1993		1994	Navigation Channels
Canaveral Harbor, FL	1994		2044	Jetty extension and sand tightening
Cape Cod Canal, MA	2000		2004	Major Rehabilitation of Railroad Bridge
Channel to Newport News, VA (1965 Mod.)	1967	1968	Indefinite	Deferred anchorage construction
Channel to Newport News, VA (1986 Mod.)	1987	1989	Indefinite	Dredge 50 ft. Channel. Deepen to 55 feet
Channel to Victoria, TX	1993		2002	Enlarging and deepening channel to 12 foot depth
Charleston Harbor (Deeping/Widening), SC	1998	2001	2008	Deepen Entrance Channel to 47 feet and inner channels to 45 feet depth.
Chicago Harbor (Lock), IL	1995		1997	Lock Bulkhead Fabrication
Chicago Harbor (Lock), IL	1996		1997	Construct Slots to Dewater Lock Gate Bays
Cook Inlet Navigation Improvement, AK	1998		2001	Channel Dredging
Crescent City Harbor, CA	1998		2000	Deepen Channel

APPENDIX D
Navigation Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Delaware River Mainstem Channel & Deepening, NJ, PA, & DE	1999		2006	Deepen Channel
Fort Pierce Harbor, FL	1995		1996	Enlarge entrance channel
Freeport Harbor, TX	1987	1991	1998	Dredging, jetty construction, and recreation
Grays Harbor, WA	1990	1997	2001	Navigation channel widening and deepening
Grays Landing Lock & Dam (Lock & Dam 7) Monongahela River, PA	1986		2001	Construct new lock & dam to replace existing lock & dam 7
Gulf Intracoastal Waterway, Aransas National Wildlife Refuge, TX (Sec 216)	1998	2001	2001	Bank Protection to protect Gulf Intracoastal Waterway and the critical habitat of endangered whooping crane
Gulfport Harbor, MS	1991	1994	(6)	Deepen Channel
Helena Harbor, Phillips County, AR	1989	1995	1995	New Slackwater Harbor
Hempstead Harbor, NY	1992		1995	Removal of derelect barges
Houston-Galveston Navigation Channels, TX	1998		2005	Deepen and Widen Houston Ship Channel and Galveston Harbor and Channel
Humboldt Harbor and Bay Deepening, CA	1997		2000	Deepening and Widen channel
Illinois Waterway Four Locks	1993		1996	Major rehabilitation of locks and dams
Inner Harbor Navigation Canal Lock	1999		2012	Lock Replacement
Jacksonville Harbor, FL	1999		2003	Dredging material disposal facilities
Kake Harbor, AK	1997		2000	Breakwater and Navigation Channel
Kawaihae Small Boat Harbor, Hawaii, HI	1996	1998	1998	Breakwater
Kentucky Lock Addition, KY	1998		2010	Lock Addition (1200 feet)
Laupahoehoe Harbor, Hawaii, HI	1988	1988	1988	Breakwater

APPENDIX D
Navigation Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Lock and Dams 2, 3 and 4, Monongahela, PA and WV	1992		2010	Major rehabilitation of locks and dams, removal of Lock and Dam 3
Lock and Dam 3, MN	1998		2006	Major rehabilitation/embankments
Lock and Dams 3, 5A, 6,7,8 and 9, MN, WI and IA	1989		2004	Major rehabilitation of electrical/mechanical systems
Lock and Dam 14, IL	1996	2001	2002	Major rehabilitation of lock and dam
Lock and Dam 24, MO	1996	1940	2007	Major rehabilitation of lock and dam
Lock and Dam 25, MO	1994	1939	2002	Major rehabilitation of lock and dam
London Locks and Dam, Kanawha River, WV	1999		2003	Major rehabilitation of lock and dam
Los Angeles Harbor, CA	1996		2001	Channel Deepening
McAlpine Lock and Dam	1996		2008	Lock Replacement (1200 feet)
McClellan-Kerr Arkansas River Navigation System, AR	1963	1970	2000	Locks and dams
Manatee Harbor, FL	1995		2004	Enlarge turning basin, construct wideners, mitigation
Marmet Locks & Dam, Kanawha River, WV	1998		2010	Construction of new lock
Melvin Price Lock and Dam, IL and MO	1974	1990	2005	Replacement
Miami Harbor Channel, FL	1993		2004	Navigation Channels & Turning Basin
Mississippi River between Ohio and Missouri Rivers IL and MO	1910		2014	Regulating Works
Mississippi River, Ship Channel, Gulf to Baton Rouge, LA	1987	1987 [2]	Indefinite [3]	Dredging 55-foot channel
Montgomery Point Lock and Dam, AR	1997		2002	Lock and Dam
Mouth of Colorado River, TX (Gulf Intracoastal Waterway)	1984	1994	1995	Breakwaters, dredging, and recreation
Nawiliwili Harbor, Kauai, HI	1985	1987	1987	Breakwater repair

APPENDIX D
Navigation Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Neches River Saltwater Barrier	2000		2005	Construction of a tainter-gated saltwater barrier structure, sector-gated navigation bypass channel, access road and levee
New Madrid County Harbor	2000	2000	2000	Slackwater Harbor Expansion
Norfolk Harbor Channel, VA (1965 Mod.)	1966	1967	Indefinite	Deferred anchorage const.
Norfolk Harbor Channel, VA (1986 Mod)	1987	1989	Indefinite	Dredge 50 ft. channel and deepen to 55 feet
North Pass-Pass Manchac, LA (107)	1995	1995	1996	9ft.x 130ft. barge channel
Oakland Harbor, CA	1987		Undetermined	Channel deepening and widening turning basin
Olmsted Locks and Dam, IL & KY	1992		2011	Navigation
Ouachita and Black River, AR and LA	1964	1984	Indefinite	Replacement of six locks and dams, channel deepening to 9 feet and realignment
Palm Valley Bridge, FL	1998		2002	Bridge Replacement
Pascagoula Harbor, MS	1994		2001	Channel dredging and construction of a new turning basin
Point Marion, Lock & Dam 8, Monongahela River, PA	1986		1997	Replaces existing 56x360' lock chamber with new 84'x720' chamber
Port of Florence, AL	1994	1995	1995	Channel Dredging
Port of Long Beach (Deepening), CA	1998		2003	Channel Deepening
Red River WW, Mississippi River to Shreveport, LA	1974	1984[4]	Indefinite[5]	Lock and dam construction. Channel improvement and realignment
Richmond Harbor, CA	1985		2000	Channel deepening and turning basin
Robert C. Byrd Locks and Dam, Ohio River	1985	1992	2004	Replacement of existing locks and major rehabilitation of the dam
Rudee Inlet, VA	1990	1991	1991	Dredge 7 foot channel

APPENDIX D
Navigation Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Sacramento River Deep Water Ship Channel, CA	1986		Being Determined	Deep draft channel, widening and deepening
Salem River, NJ	1995	1996	1996	Channel deepening
San Francisco Bay to Stockton, CA (John F. Baldwin and Stockton Ship Channels)	1971		Being Determined	Deep draft channel, widening, deepening and dredging
San Juan Harbor, PR	1998		2003	Deepening & widening for channel
Santa Barbara Harbor, CA	1991		Indefinite	Acquire Dredge
Santa Monica Breakwater, CA	1998		Indefinite	Repair Breakwater
Saugus River, Saugus, MA (Sec 107)	2000	2001	2001	Dredge entrance channel and two anchorages
Seekonk River, Providence, RI	2001		2002	Remove India Point Railroad Bridge
Sonoma Baylands Wetlands Demonstration Project, CA	1993		1997	Restoration of Tidal Wetlands on a 348 acre site
Savannah Harbor Deepening, GA	1993		1994	Channel deepening
Savannah Harbor Widening, GA	1990		1992	Widening channel
Seattle Harbor, East Waterway, WA[7]	1999		2003	Dredge East Waterway to 51 ft.
Shallow Creek Spur Channel, MD	1999	2000	2003	Spur Channel
St. George Channel Extension, AK	1994		1996	Dredging
St. Lucie Inlet, FL	2001		2002	Impoundment basin and jetty elements
St. Paul Harbor Improvements, AK	1999		2004	Breakwater Improvements and Dredging
Taconite Harbor, MN	2000		2001	Harbor of refuge construction
Tampa Harbor, FL (Main Channel)	1976		1987	Dredging
Tampa Harbor (Port Sutton), FL	1991		2005	Deepen Channel
Tampa Harbor (Ybor Channel), FL	1999		2001	Enlarge turning basin
Taylor Point Cut, LA (107)	1999	1999	1999	Navigation cut from Charenton LK to Grand Isle
Tenn River, Port of Florence	1994		1995	Channel Improvements

APPENDIX D
Navigation Projects Under Construction During Fiscal Year 2001

Project	Fiscal Year Started	Placed in Useful Operation	Fiscal Year Completed or Scheduled for Completion	Nature of Project
Wallisville Lake, TX	1967	1999	2003	Multipurpose lake (navigation, salinity control, water supply, fish & wildlife, & recreational)
Wilmington Harbor, NC	1999		2009	Dredging to Deepen
Winfield Locks and Dam, Kanawha River, WV	1990	1997	2002	Construction of new lock

APPENDIX D
Navigation Projects Under Construction During Fiscal Year 2001

[1] Walter B. Jones, Joseph P. Knapp, Core Creek, and Gene A. Potter Memorial Bridge are complete. Fairfield bridge is under construction.

[2] Phase I, forty-five foot channel to New Orleans, LA. Forty-five foot channel to Mile 181 (Donaldsonville, LA) placed in useful operation in 1988. Phase II, forty-five foot channel from mile 181 to Baton Rouge placed in useful operation in 1994.

[3] Awaiting further PCA's to go deeper than 45 feet.

[4] Lock and Dam No. 1 placed in useful operation in 1984. Lock and Dam No. 2 in 1987. Lock and Dam No. 3 in 1992. Lock and Dam No. 4 and 5 in 1994.

[5] Schedule for completion of entire project is indefinite. However, the project opened to 9-foot navigation on 31 December 1994.

[6] Thin-layer monitoring program is continuing.

[7] O& M funded.

APPENDIX E
Multiple-Purpose Projects Including Power
Operable September 30, 2001

Project	River	Community in Vicinity	Total Storage Capability (acre-feet)[1]	Flood Control and/or Nav. Feature Placed in Useful Operation CY	Initial Power in FY	Existing Installation (KW)	Ultimate Installation (KW)	Project Functions	Type[2]	Height (feet)	Length (feet)
Albeni Falls, ID	Pend Oreille	Newport,WA	1,153,000	1952	1955	42,600	42,600	NFPR	C	90	1,055
Allatoona Lake,GA	Etowah	Cartersville,GA	670,000	1950	1950	74,000	74,000	FPRW	C	190	1,250
Barkley Dam & Lake Barkley, KY & TN	Cumberland	Frand Rivers, KY	2,082,000	1964	1966	130,000	130,000	NPFR	CE	157	9,959
Beaver Lake, AR	White	Eureka Springs,	1,952,000	1963	1965	112,000	112,000	FPSR	CE	228	2,575
Big Bend Dam (Lake Sharpel), SD	Missouri	Chamberlain,SD	1,883,000	1964	1965	468,000	468,000	FPRIW	E	95	10,570
Blakely Mountain Dam-Lake Ouachita	Ouachita	Mt. Pine, AR	2,768,000	1953	1956	75,000	75,000	FPRW	E	235	1,100
Bonneville L&D Lake Bonneville, OR & WA	Columbia	Bonneville,OR	537,000	1938	1938	1,145,700	1,145,700	NPR	C	122	2,690
Broken Bow Lake, OK	Mountain Fork	Broken Bow, OK	1,368,230	1968	1970	100,000	100,000	FPWSR	E	225	2,750
Buford Dam, Lanier, GA	Chattahoochee	Buford, GA	2,554,000	1956	1957	86,000	86,000	NFPW	E	192	5,400
Bull Shoals Lake AR & MO	White	Mountain Home	5,408,000	1952	1953	340,000	340,000	FPR	C	258	2,256
Clarence Cannon Dam	Salt	Perry, MO	1,428,000	1983	1985	58,000	58,000	FNPRSW	CE	138	1,700
Carters Dam, GA	Coosawatte	Carters, GA	472,756	1975	1975	500,000	500,000	FPRW	ER	450	1,950
Center Hill Lake, TN	Caney Fork	Lancaster,TN	2,092,000	1948	1951	135,000	135,000	FPR	CE	250	2,160
Cleatham L&D, TN	Cumberland	Ashland City, TN	104,000	1952	1958	36,000	36,000	NPR	C	75	801
Chief Joseph Dam, (Rufus Woods Lake), WA	Columbia	Bridgeport, WA	593,000	1955	1956	2,457,384	2,457,384	PIR	C	230	5,998
Cooper River, Charleston Harbor, SC	Santee	St. Stephen, SC	2,560,000	N/A	1985	84,000	84,000	NPW	CE	86	876
Cordell Hull L&D, TN	Cumberland	Carthage, TN	310,900	1973	1974	100,000	100,000	NPR	CE	93	1,306

APPENDIX E
Multiple-Purpose Projects Including Power
Operable September 30, 2001

Project	River	Community in Vicinity	Total Storage Capability (acre-feet)[1]	Flood Control and/or Nav. Feature Placed in Useful Operation CY	Initial Power in FY	Existing Installation (KW)	Ultimate Installation (KW)	Project Functions	Type[2]	Height (feet)	Length (feet)
Cougar Lake, OR	S.Fork McKenzie	Blue River, OR	219,000	1963	1964	25,000	64,600	NFPRI	ER	445	1,738
Dale Hollow Lake, TN & KY	Obey	Celina, TN	1,706,000	1943	1949	54,000	54,000	FPR	C	200	1,717
Dardanelle L&D, AR	Arkansas	Dardanelle, AR	486,200	1969	1965	124,000	124,000	NPR	C	68	2,683
DeGray Lake, AR	Caddo	Arkadelphia, AR	831,900	1969	1972	68,000	108,000	FNPRS	E	243	3,400
Denison Dam (Lake Texoma), TX & OK	Red	Denison, TX	5,194,163	1944	1945	70,000	199,000	FPRSNW	E	165	17,200
Detroit Lake, OR, including Big Cliff Lake, OR	North Santiam	Mill City, OR	461,000	1953	1954	118,000	118,000	NFPRI	C	382	1,528
Dworshak Dam & Reservoir, ID	N. Fork, Clearwater	Orofino, ID	3,468,000	1972	1973	400,000	1,060,000 [7]	PNFR	CG	717	3,287
Eufaula Lake, OK	Canadian	Eufaula, OK	3,825,400	1964	1964	90,000	90,000	FNPSRWX	E	114	3,200
Fort Gibson Lake, OK	Grand (Neosho)	Ft. Gibson, OK	1,284,400	1949	1953	45,000	67,500	FPNW	E	110	2,990
Fort Peck Lake, MT	Missouri	Glasglow, MT	18,909,000	1938	1944	185,250	185,250	NFPRIW	E	251	21,026
Fort Randal Dam Lake Francis (Case), SD	Missouri	Lake Andes, SD	5,574,000	1953	1954	320,000	320,000	NFPRIW	E	165	10,700
Garrison Dam (Lake Sakakawea), ND	Missouri	Riverdale, ND	24,137,000	1954	1956	430,000	430,000	NFPRIW	E	210	11,300
Gavins Point Dam (Lewis & Clark Lake), SD & NE	Missouri	Yankton, SD	504,000	1956	1957	100,000	100,000	NFPRIW	E	74	8,700
Green Peter Lake,OR, including Foster Lake, OR	Middle Santiam	Sweet Home, OR	491,000	1967	1967	100,000	100,000	PFNIR	C	340	1,380
Greers Ferry Lake, AR	Little Red	Heber Spings	2,844,000	1962	1964	96,000	96,000	FPRS	C	243	1,704
Harry S. Truman Dam & Res.	Osage	Warsaw, MO	5,202,000	1979[3]	1982	160,000	160,000	FPRWS	CE	96	5,000

APPENDIX E
Multiple-Purpose Projects Including Power
Operable September 30, 2001

Project	River	Community in Vicinity	Total Storage Capability (acre-feet)[1]	Flood Control and/or Nav. Feature Placed in Useful Operation CY	Initial Power in FY	Existing Installation (KW)	Ultimate Installation (KW)	Project Functions	Type[2]	Height (feet)	Length (feet)
Hartwell Dam & Lake, GA & SC	Savannah	Hartwell, GA	2,842,700	1961	1962	422,000	422,000	FPRSW	CE	204	17,880
Hills Creek Lake, OR	Middle Fork Wilamette	Oakridge, OR	356,000	1961	1962	30,000	30,000	NFPRI	GE	304	2,150
Ice Harbor L&D (Lake Sacajawea), WA	Snake	Pasco, WA	417,000	1961	1961	603,000	603,000	NPRI	CG	130	2,822
J. Percy Priest Dam & Reservoir, TN	Stones	Nashville, TN	652,000	1967	1970	28,000	28,000	FPRW	CE	147	2,716
J. Strom Thurmond Dam & Lake GA & SC[6]	Savannah	Augusta, GA	2,900,000	1952	1953	282,000	282,000	FPRSW	CE	200	5,680
Jim Woodruff Dam (Lake Seminole), FL, GA & AL	Appalachicola	Chattahoochee, FL	367,300	1957	1957	30,000	30,000	NPRW	CE	67	6,150
John Day L&D (Lake Umatilla), OR & WA	Columbia	Rufus, OR	2,500,000	1968	1969	2,160,000	2,700,000	NPRFI	CE	161	5,900
John H. Kerr Dam & Reservoir, NC& VA	Roanoke	Boydton, VA	2,750,300	1952	1953	204,000	204,000	FPRW	CE	144	22,285
Keystone Lake, OK	Arkansas	Tulsa, OK	1,672,613	1964	1968	70,000	70,000	FNPWSR	E	121	4,600
Lake Greeson, AR	Little Missouri	Murfreesboro, AR	407,900	1950	1950	25,500	25,500	FPRW	C	183.5	941
Laurel River, KY	Laurel	London, KY	435,600	1973	1978	61,000	61,000	FPRW	R	282	1,420
Libby Dam, Lake Koocanusa, MT	Kootenai	Libby, MT	5,809,000	1972	1975	525,000	840,000	FPR	C	420	3,055
Little Goose L&D (Lake Bryan), WA	Snake	Starbuck, WA	565,200	1970	1970	810,000	810,000	NPRI	CG	165	2,655
Lookout Point Lake including Dexter Lake, OR	Middle Fork	Lowell, OR	483,000	1954	1955	135,000	135,000	NFPRI	CE	243	3,381
Lost Creek Lake, OR	Rogue	Trail, OR	465,000	1977	1977	49,000	49,000	DFPISWR	CE	345	3,600
Lower Granite L&D, WA	Snake	Pomeroy, WA	483,800	1975	1975	810,000	810,000	NPRIF	CG	146	3,200

APPENDIX E
Multiple-Purpose Projects Including Power
Operable September 30, 2001

Project	River	Community in Vicinity	Total Storage Capability (acre-feet)[1]	Flood Control and/or Nav. Feature Placed in Useful Operation CY	Initial Power in FY	Existing Installation (KW)	Ultimate Installation (KW)	Project Functions	Type[2]	Height (feet)	Length (feet)
Lower Monumental L&D (Lake Herbert G. West), WA	Snake	Kahlotus, WA	376,000	1969	1969	810,000	810,000	NPRI	CG	135	3,791
McNary L&D OR & WA	Columbia	Umatilla, OR	1,350,000	1953	1954	980,000	980,000	NPRI	CG	183	7,365
Millers Ferry L&D, AL	Alabama	Camden, AL	331,8090	1969	1979	75,000	75,000	NPRW	CE	90	11,380
Mississippi Delta Region, LA (Caernarvon Freshwater Diversion)	Mississippi	Braithwaite, LA		1991				W	CE	38.5	371
Nanpil River Hydropower, Pohnpei, FSM	Nanpil River	Pohnpei, FSM		1987	1988	2,000	2,000	P	C	17	70
New Melones Lake, CA[4]	Stanislaus	Oakdale, CA	2,400,000	1978	1979	300,000	300,000	FIPRW	ER	625	1,560
Norfork Lake, AR & MO	North Fork	Norfolk, AR	1,983,000	1943	1944	80,550	163,000	FPRS	C	216	2,624
Oahe Dam (Lake Oahe), SD & ND	Missouri	Pierre, SD	23,337,000	1959	1962	595,000	595,000	NFPRIW	E	245	9,300
Old Hickory L&D, TN	Cumberland	Hendersonville, TN	545,000	1954	1957	100,000	100,000	NPR	CE	98	3,605
Ozark-Jeta Taylor L&D, AR	Arkansas	Ozark, AR	148,400	1969	1973	100,000	100,000	NPR	C	58	2,480
Philpott Lake, VA	Roanoke	Bassett, VA	318,500	1951	1954	14,000	14,000	FPR	C	220	892
Richard B. Russell Dam & Lake, GA & SC	Savannah	Augusta, GA	1,026,244	1984	1984	300,000	600,000	PRFSW	CE	200	5,616
Robert F. Henry L&D, AL	Alabama	Benton, AL	234,200	1972	1975	68,000	68,000	NPRW	CE	101	14,962

APPENDIX E
Multiple-Purpose Projects Including Power
Operable September 30, 2001

Project	River	Community in Vicinity	Total Storage Capability (acre-feet)[1]	Flood Control and/or Nav. Feature Placed in Useful Operation CY	Initial Power in FY	Existing Installation (KW)	Ultimate Installation (KW)	Project Functions	Type[2]	Height (feet)	Length (feet)
Robert S. Kerr L&D and Reservoir, OK	Arkansas	Sallisaw, OK	525,700	1970	1971	110,000	110,000	NPRW	E	75	7,230
Sam Rayburn Dam& Reservoir, TX	Angelina	Jasper, TX	3,997,600	1965	1966	52,000	52,000	FPWR	CE	120	19,430
St. Mary's Riv, MI	Great Lakes	Sault Ste. Marie	---	1855	1952	18,400	18,400	NP		Control Gate	
Snettisham, AK[5]	Speel	Juneau, AK	352,400		1973	73,700	73,700	P	C[6]	18	338
Stockton Lake, MO	Sac	Stockton, MO	1,674,000	1969	1973	45,200	45,200	FPRWSQ	CEG	128	5,100
Table Rock Lake, AR & MO	White	Branson, MO	3,462,000	1958	1959	200,000	200,000	FPR	CE	252	6,423
Tenkiller Lake, OK	Illinois	Gore, OK	1,230,800	1952	1953	39,100	39,100	FPSWRN	E	197	3,000
The Dalles L&D (Lake Celilo), WA & OR	Columbia	The Dalles, OR	53,000	1957	1957	1,806,800	1,806,800	NPR	CR	300	8,875
Walter F. George L&D, GA & FL	Chattahooche	Fort Gaines, GA	934,000	1963	1963	130,000	130,000	NPRW	CE	114	13,585
Webbers Falls L&D, OK	Arkansas	Wevbbers Falls, OK	170,100	1970	1973	60,000	60,000	NPRW	E	84	4,370
West Point Lake, AL & GA	Chattahooche	West Point, GA	604,500	1975	1975	73,375	108,375	FPRW	CE	97	7,250
Whitney Lake, TX	Brazos	Whitney, TX	1,999,500	1953	1954	30,000	30,000	FPR	CE	159	17,695
Wolf Creek Dam (Lake Cumberland), KY	Cumberland	Jamestown, KY	6,089,000	1950	1952	270,000	270,000	FPR	CE	258	5,736

APPENDIX E
Multiple-Purpose Projects Including Power
Operable September 30, 2001

NOMENCLATURE FOR PROJECT FUNCTIONS

D - Debris Control
F - Flood Control
I - Irrigation
N - Navigation
P - Power
R - Public Recreation Annual Attendance exceeding 5,000
S - Water Supply
W - Fish & Wildlife (Federal Or State)

[1] Total of all storage functions, including inactive and dead storage to normal full pool
[2] G: gravel; R: rock; C: concrete; E: earth
[3] All six units have successfully generated power; however, repairs and modifications have been required on all units. Units 2, 3, 4, 5 and 6 fully repaired and operational. Repairs to remaining unit No. 1 will be completed in FY 99.
[4] Being operated for the Department of Interior by the Bureau of Reclamation
[5] Being operated by the Alaska Power Administration
[6] Formerly Clarks Hill Lake
[7] Units 5 and 6 were deauthorized in 1990.

APPENDIX F
Multiple-Purpose Projects Including Power
Under Construction September 30, 2001

Project	Fiscal Year Started	Scheduled For Operation	Scheduled For Completion	Nameplate Capacity		
				Scheduled Functions	Ultimate Installation	Installation
Columbia River Treaty Fishing Sites, OR	1994		2006	W	N/A	N/A
Garrison Dam & Powerplant, ND (Maj Rehab)	1997	2007	2007	P/F/N/I	109,950	98,000
Mississippi Delta Region, LA (Davis Pond Freshwater Diversion)	1996	2000	2003	2003	W	
New Melones Lake, CA [1]	1966	1979	Indefinite	DFIPRW	300,000	300,000
Pierre, SD	1999	2006	2006	F	N/A	N/A
Richard B. Russell Dam and Lake, Savannah River, GA and SC	1975	1985	2004	FRPW	600,000	600,000

KEY

D	- Redevelopment	F	- Flood Control	I	- Irrigation	N	- Navigation
P	- Power	R	- Recreation	S	- Water Supply	W	- Fish & Wildlife

APPENDIX F
Multiple-Purpose Projects Including Power
Under Construction September 30, 2001

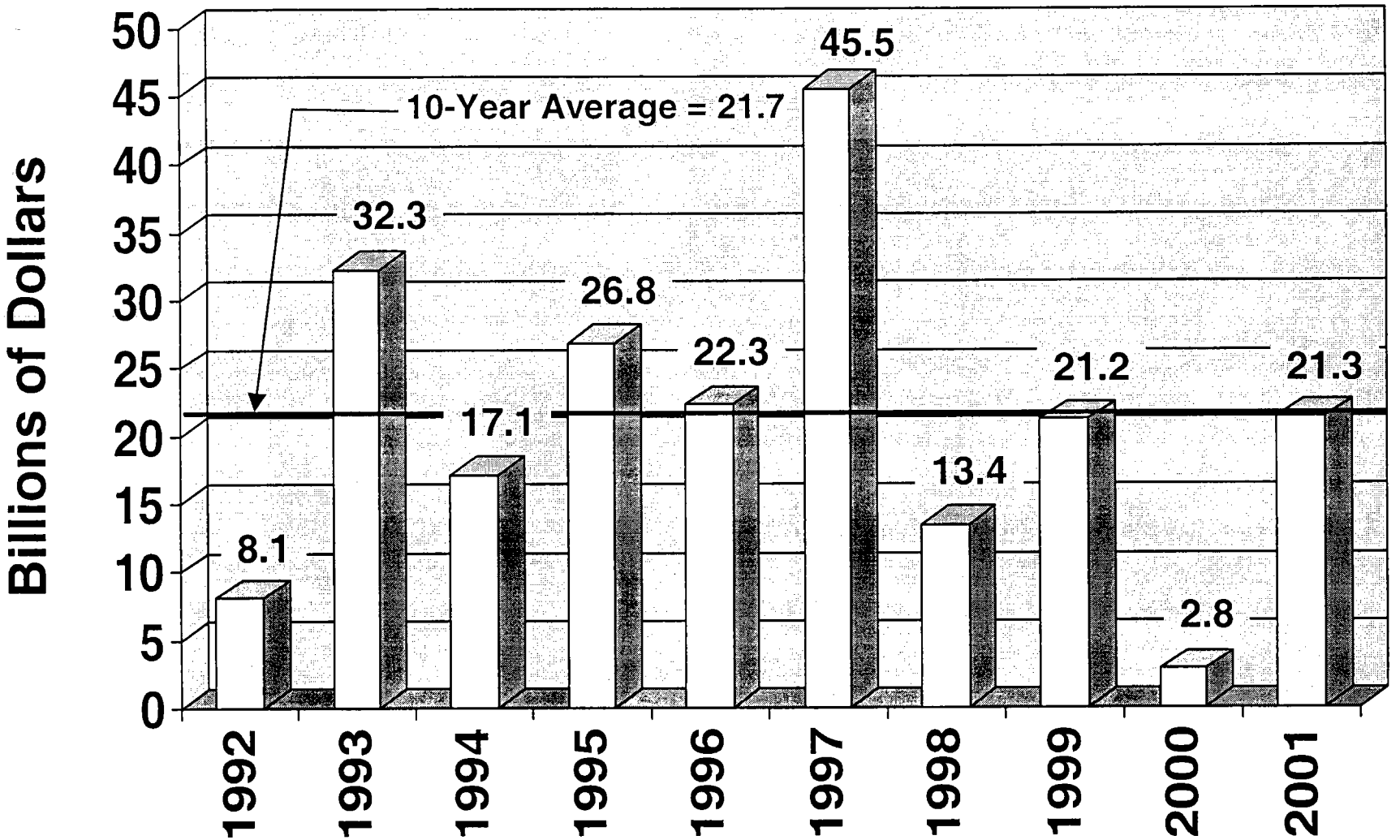
[1] New Melones Lake was turned over to the Bureau of Reclamation for operation on November 20, 1979. Corps retains responsibility for facilities along the lower Stanisalaus River. Remaining construction consists of unscheduled recreation facilities and minor feature closeouts.

Appendix G

ANNUAL FLOOD DAMAGE REDUCTION REPORT
Provided by CECW-EW (Wingerd)

FIGURES

Figure 1
Flood Damage Reduction



Flood Damages Prevented in the U.S.A. by the U.S. Army Corps of Engineers

Figure 2
Potential Flood Damages

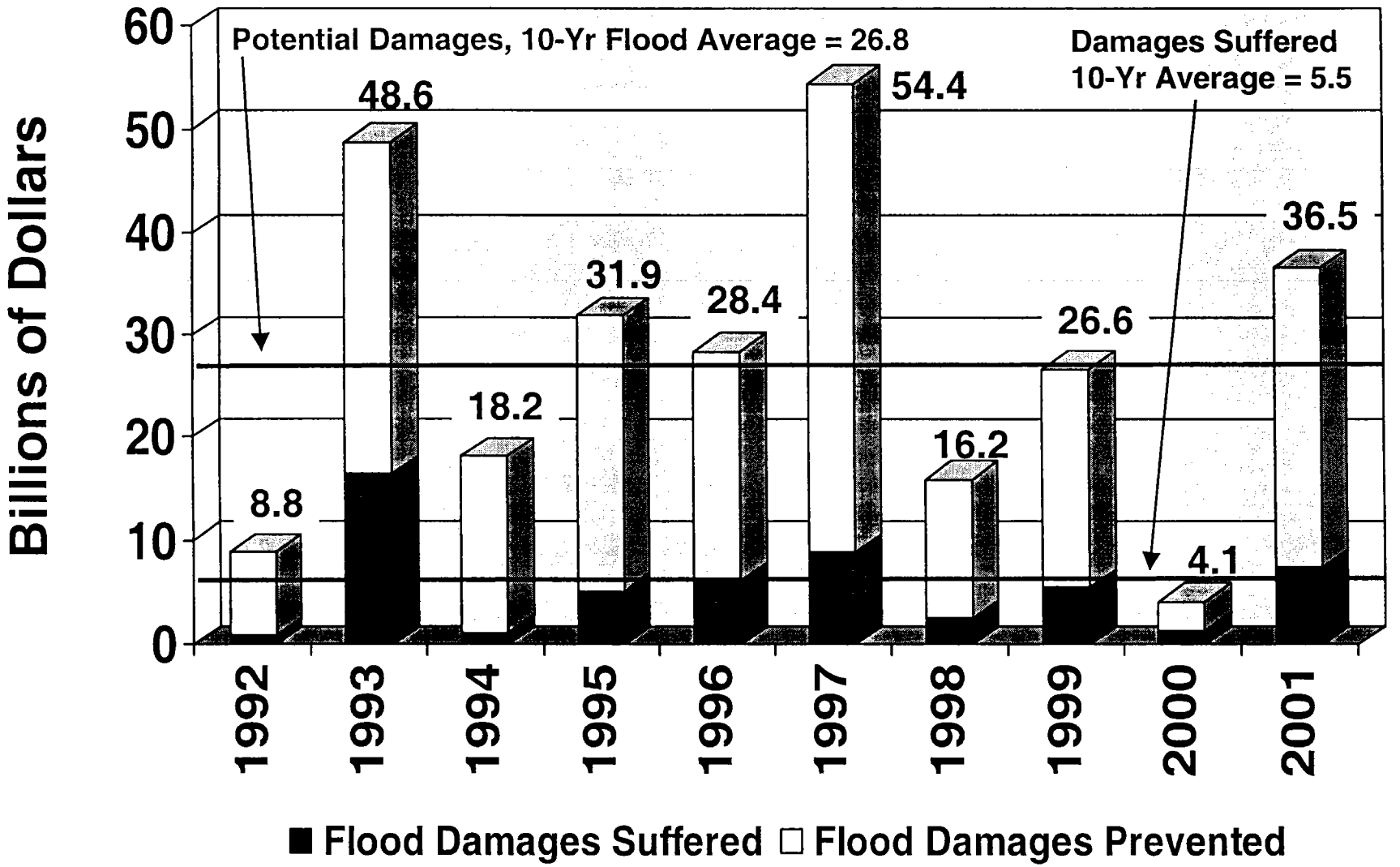
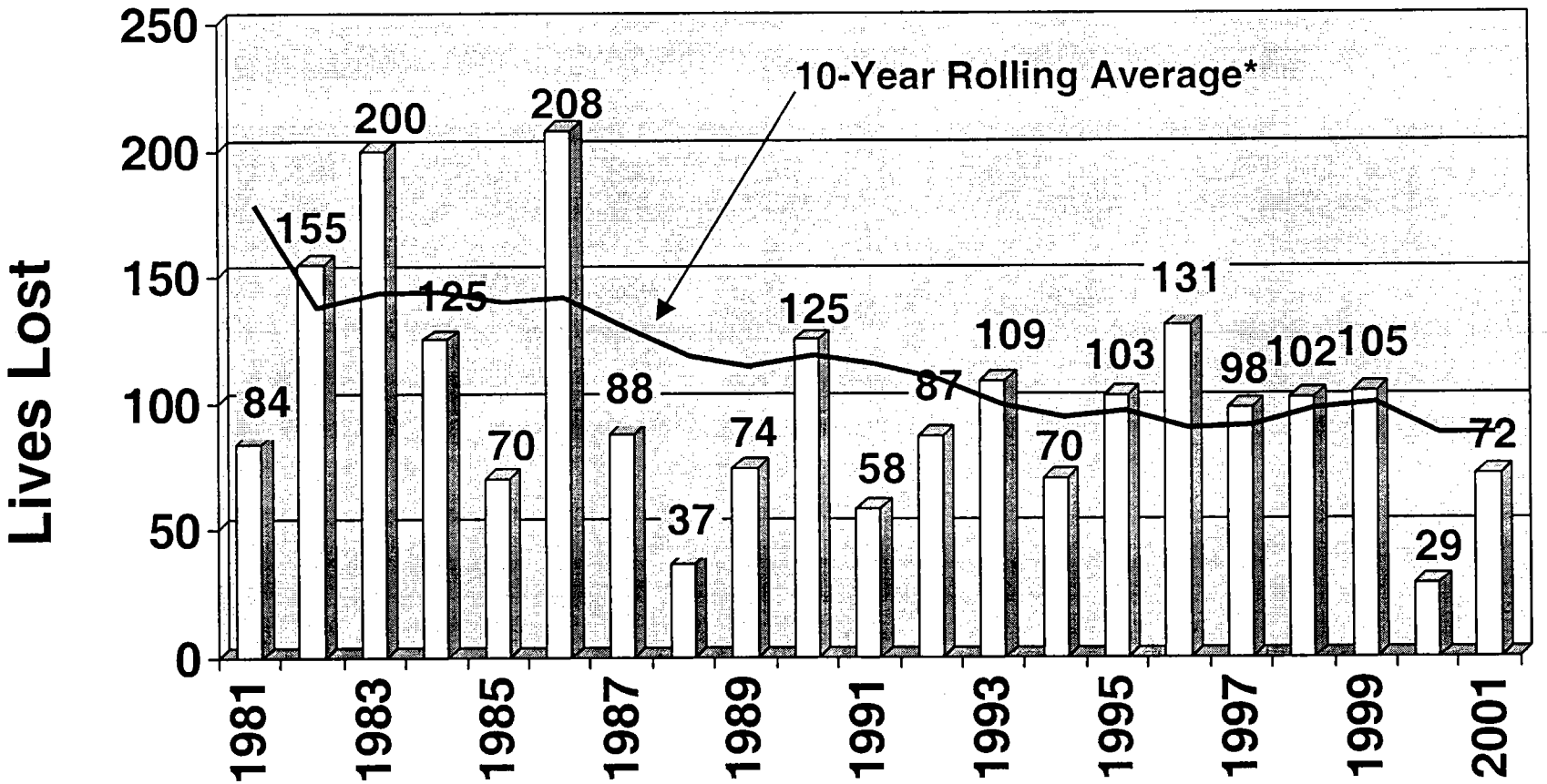


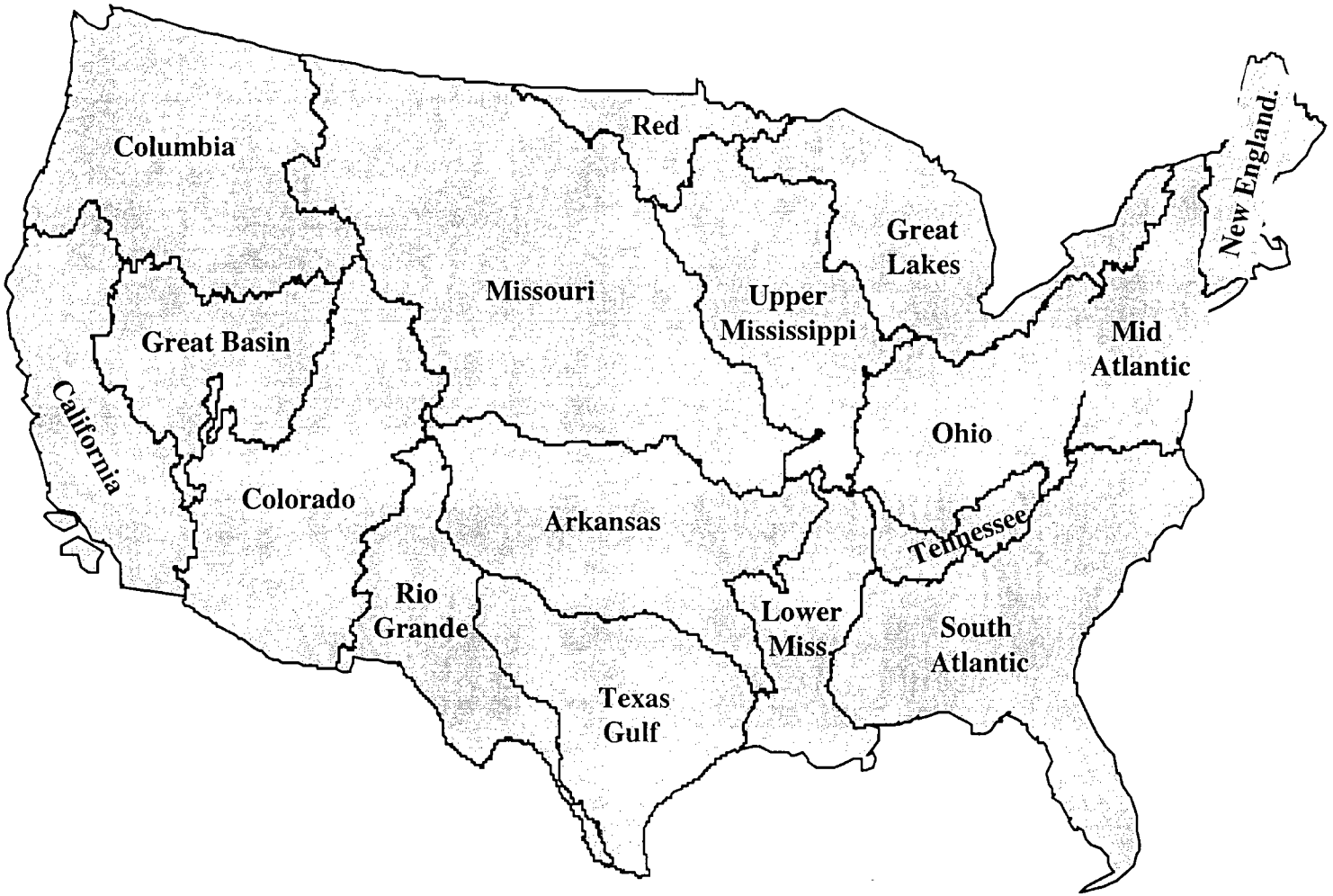
Figure 3
Flood Related Lives Lost



* Average for the previous 10-years.

Fiscal Year

Figure 4
Continental U.S. River Basins



For use with Table 6

Figure 5

Benefits of Federal Projects (Damages Prevented)
Accumulative Corps Expenditures (Principle plus O&M)

Adjusted to 2000 using Construction Cost Index EM 1110-2-1304

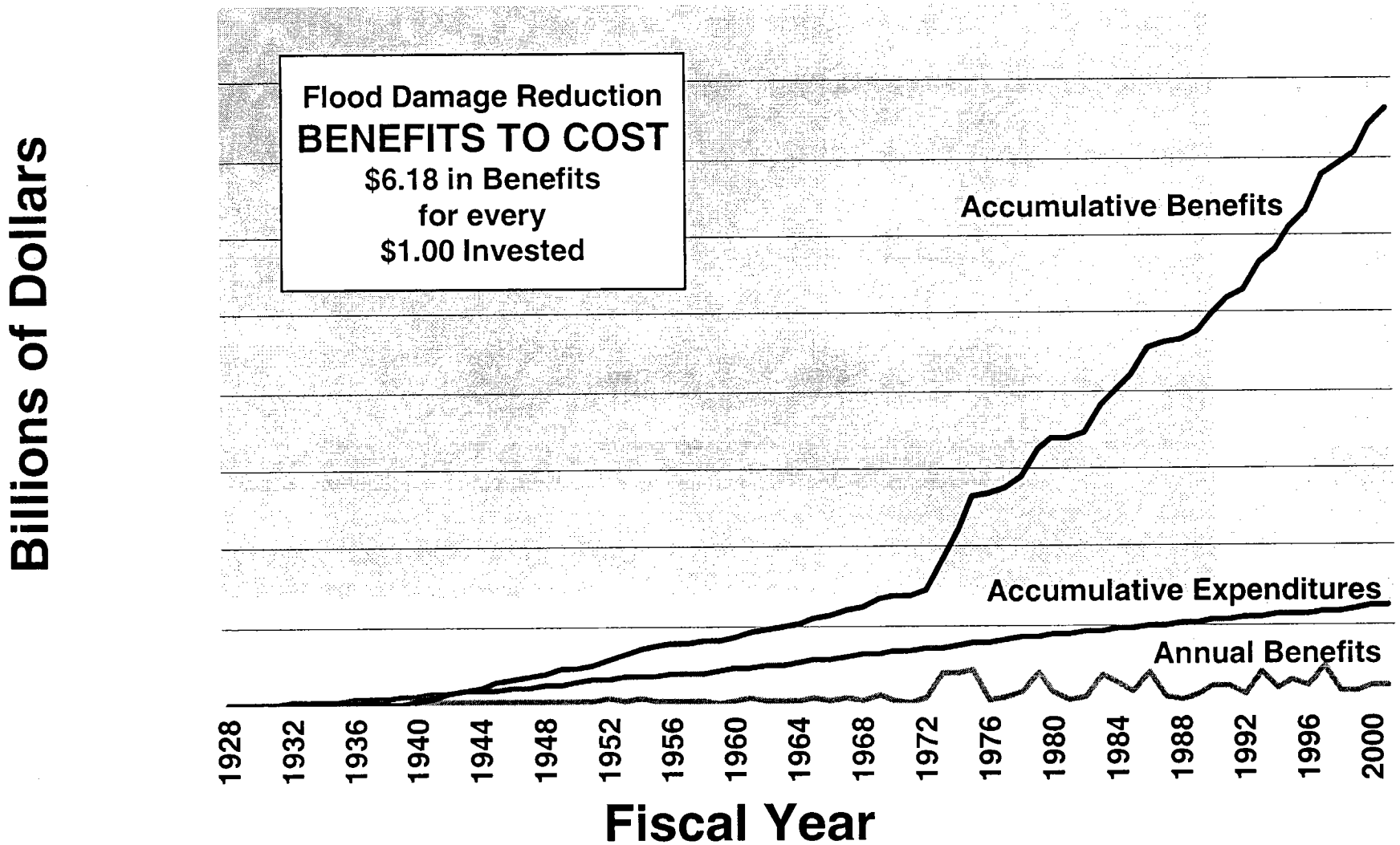
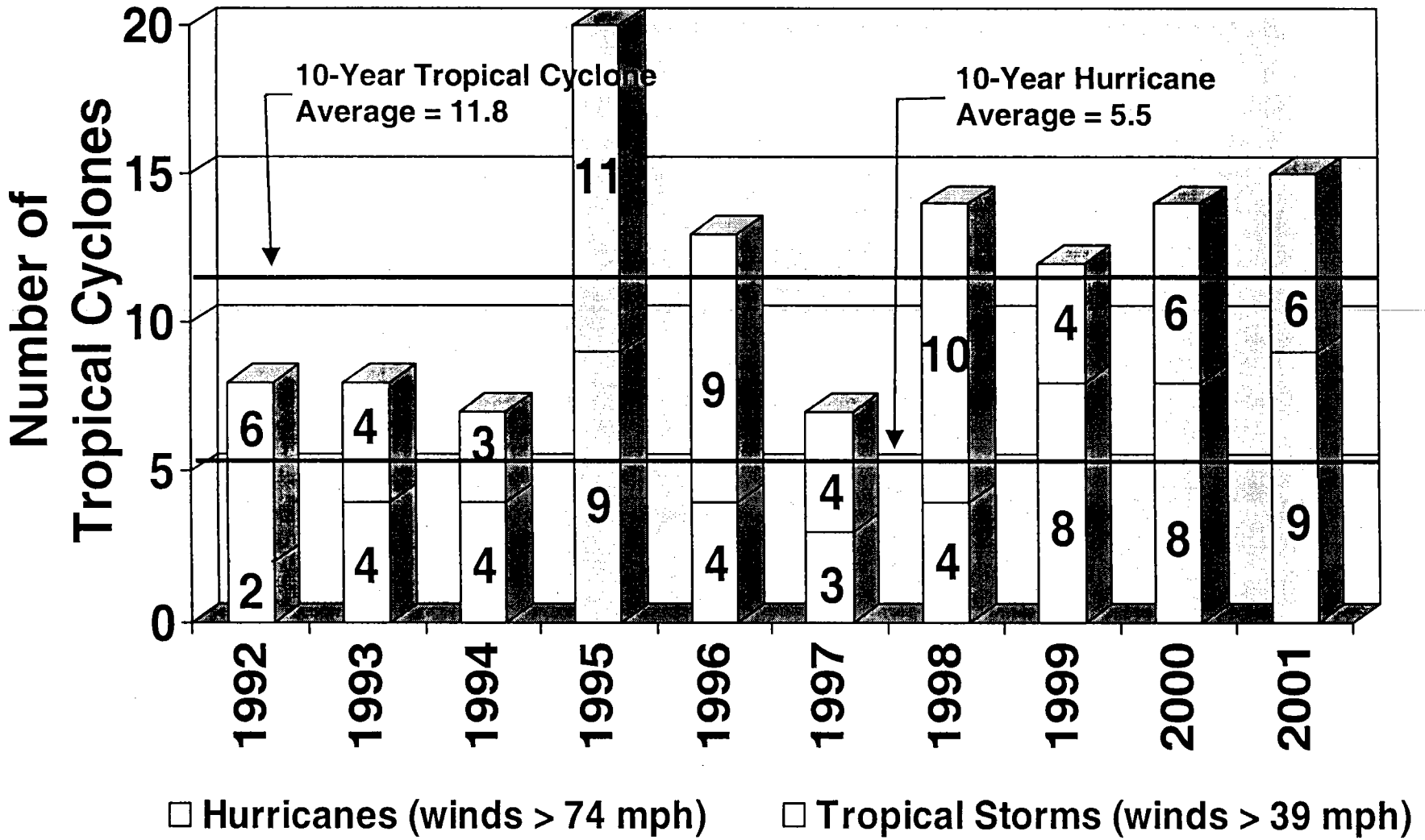


Figure 6
Atlantic Tropical Cyclones



TABLES

TABLE - 1

FLOOD DAMAGE REDUCTION

BY STATE (THOUSANDS OF DOLLARS) During Fiscal Year 2001

Location	Reduction by Corps Supported Reservoirs	Reduction by Corps Levees	Damages Prevented by Corps Supported Emergency Operations	Total Flood Damages Reduction by the Corps of Engineers	Average Damage Reduction FY 1992-2001	*Comparision of 2000 to the Ten-Year Avg FY 1992-2001
ALABAMA	0	$0	$0	0	0	Low
ALASKA	0	$0	$0	0	2,770	Low
ARIZONA	1,820	$0	$0	1,820	28,684	Low
ARKANSAS	15,791	$674,788	$0	690,579	1,135,629	Medium
CALIFORNIA	679,344	$135,110	$0	814,454	993,717	Medium
COLORADO	0	$0	$0	0	6,156	Low
CONNECTICUT	19,726	$17,638	$0	37,364	29,356	Medium
DELAWARE	0	$0	$0	0	0	Low
FLORIDA	10,000	$48,849	$0	58,849	50,691	Medium
GEORGIA	0	$0	$0	0	13,518	Low
GUAM & Am. Samoa	0	$0	$0	0	16	Low
HAWAII	0	$14,197	$0	14,197	1,902	High
IDAHO	16,636	$0	$161	16,797	84,059	Low
ILLONOIS	4,170	$686,027	$0	690,197	749,223	Medium
INDIANA	21,481	$9,219	$0	30,700	107,593	Low
IOWA	16,649	$396,765	$0	413,414	218,087	Medium
KANSAS	200,457	$4,660	$0	205,117	784,598	Low
KENTUCKY	18,029	$258	$0	18,287	132,625	Low
LOUISIANA	6,604	$12,143,301	$0	12,149,905	7,226,123	Medium
MAINE	0	$0	$0	0	7	Low
MARYLAND & DC	0	$26	$0	26	38,093	Low
MASSACHUSETTS	26,009	$24,700	$0	50,709	25,177	High
MICHIGAN	0	$8,863	$50	8,913	5,915	Medium
MINNISOTA	87,835	$191,136	$0	278,971	64,084	Very High
MISSISSIPPI	2,666	$1,048,252	$0	1,050,918	612,943	Medium
MISSOURI	280,048	$38,189	$65	318,302	3,207,430	Low
MONTANA	948	$0	$0	948	22,071	Low

TABLE - 1

FLOOD DAMAGE REDUCTION

BY STATE (THOUSANDS OF DOLLARS) During Fiscal Year 2001

Location	Reduction by Corps Supported Reservoirs	Reduction by Corps Levees	Damages Prevented by Corps Supported Emergency Operations	Total Flood Damages Reduction by the Corps of Engineers	Average Damage Reduction FY 1992-2001	*Comparision of 2000 to the Ten-Year Avg FY 1992-2001
NEBRASKA	10,584	$8,882	$0	19,466	120,278	Low
NEVADA	830	$0	$0	830	94,543	Medium
NEW HAMPSHIRE	703	$0	$0	703	778	Medium
NEW JERSEY	0	$11,166	$0	11,166	13,106	Medium
NEW MEXICO	9	$975	$0	983	55,925	Low
NEW YORK	18,186	$37,744	$0	55,930	142,543	Low
N. CAROLINA	8,689	$0	$0	8,689	102,025	Low
N. DAKOTA	129,395	$18,182	$0	147,576	90,127	Medium
OHIO	54,810	$7,168	$0	61,978	227,129	Low
OKLAHOMA	58,356	$0	$0	58,356	133,958	Low
OREGON	0	$43,727	$412	44,139	925,412	Medium
PENNSYLVANIA	4,870	$2,015	$0	6,885	405,917	Low
PUERTO RICO & VI	23,000	$0	$0	23,000	49,216	Low
RHODE ISLAND	2,399	$1,140	$0	3,539	1,547	High
S. CAROLINA	0	$0	$0	0	598	Low
S. DAKOTA	132	$720	$0	852	8,346	Low
TENNESSEE	1,421	$659	$0	2,080	32,647	Low
TEXAS	4,042,159	$436,358	$0	4,478,517	2,763,724	Medium
UTAH	7,573	$0	$0	7,573	6,563	Medium
VERMONT	1,607	$916	$0	2,523	3,598	Medium
VIRGINIA	21	$111	$0	132	36,046	Low
WASHINGTON	0	$72,022	$0	72,022	296,680	Low
W. VIRGINA	20,607	$216	$0	20,823	220,769	Low
WISCONSON	0	$4,017	$0	4,017	2,113	Medium
WYOMING	473	$1,114	$0	1,587	11,944	Low
TOTALS	5,794,036	16,089,109	688	21,883,833	21,285,996	Medium

FY 2001 Damages Prevented in the U.S. = 103% of the 10-year (1992-2001) Average

*** LEGEND:** LOW = Less than 1/2 average. MED= 1/2 to twice average. HIGH = Twice to five times average. VERY HIGH = More than five times average.

TABLE - 2

TOTAL DAMAGES SUFFERED IN FY 2001, BY STATE (THOUSANDS OF DOLLARS)

LOCATION	Damages Suffered FY 2001	Damage Reduction FY 2001	Potential Damages FY 2001	Percent Damages Reduced FY 2001	Average Damages Suffered 1992-2001	Lives Lost FY 2001	Lives Lost FY 1992-2001
ALABAMA	$1,645	$0	1,645	0	49,435		17
ALASKA	$702	$0	702	0	9,372		0
ARIZONA	$13,659	$1,820	15,479	12	26,972	14	24
ARKANSAS	$689	$690,579	691,268	100	2,598		4
CALIFORNIA	$5,055	$814,454	819,509	99	450,621		59
COLORADO	$1,242	$0	1,242	0	43,890		10
CONNECTICUT	$237	$37,364	37,601	99	2,123		1
DELAWARE	$1,100	$0	1,100	0	214		0
FLORIDA	$1,023,900	$58,849	1,082,749	5	246,724	2	6
GEORGIA	$3,431	$0	3,431	0	50,073	2	38
GUAM	$250	$0	250	0	503		0
HAWAII	$70,000	$0	70,000	0	8,821		8
IDAHO	$0	$16,797	16,797	100	17,917		1
ILLONOIS	$44,040	$690,197	734,237	94	286,525	1	13
INDIANA	$110	$30,700	30,810	100	22,545	1	19
IOWA	$33,250	$413,414	446,664	93	629,982		13
KANSAS	$2,635	$205,117	207,752	99	65,238	1	10
KENTUCKY	$17,986	$18,287	36,273	50	61,707	1	37
LOUISIANA	$30,219	$12,149,905	12,180,124	100	316,481		11
MAINE	$66	$0	66	0	5,076		5
MARYLAND & DC	$3,460	$26	3,486	1	11,312		3
MASSACHUSETT	$10,048	$50,709	60,757	83	10,204		1
MICHIGAN	$8,394	$8,913	17,307	51	9,045	3	4
MINNISOTA	$243,706	$278,971	522,677	53	200,492	3	7
MISSISSIPPI	$7,211	$1,050,918	1,058,129	99	5,379		3
MISSOURI	$1,842	$318,302	320,144	99	365,521	4	72
MONTANA	$80	$948	1,028	92	2,044		8

Damage values of less than $50 thousand dollars are shown as zeros.

TABLE - 2

TOTAL DAMAGES SUFFERED IN FY 2001, BY STATE (THOUSANDS OF DOLLARS)

LOCATION	Damages Suffered FY 2001	Damage Reduction FY 2001	Potential Damages FY 2001	Percent Damages Reduced FY 2001	Average Damages Suffered 1992-2001	Lives Lost FY 2001	Lives Lost FY 1992-2001
NEBRASKA	$391	$19,466	19,857	98	39,862		7
NEVADA	$12	$830	842	99	68,077		6
NEW HAMPSHIRI	$0	$703	703	100	1,728		1
NEW JERSEY	$0	$11,166	11,166	100	105,929		9
NEW MEXICO	$4,260	$983	5,243	19	4,621		9
NEW YORK	$7,290	$55,930	63,220	88	44,358	1	26
N. CAROLINA	$11,780	$8,689	20,469	42	325,575		51
N. DAKOTA	$65,209	$147,576	212,785	69	428,436		8
OHIO	$13,647	$61,978	75,625	82	40,855	3	30
OKLAHOMA	$9,847	$58,356	68,203	86	9,057		20
OREGON	$5	$44,139	44,144	100	339,766		10
PENNSYLVANIA	$63,506	$6,885	70,391	10	64,655	2	31
PUERTO RICO &	$150,358	$23,000	173,358	13	28,037	3	53
RHODE ISLAND	$3,005	$3,539	6,544	0	302		0
S. CAROLINA	$75	$0	75	0	6,117	1	13
S. DAKOTA	$13,567	$852	14,419	6	91,465		5
TENNESSEE	$2,153	$2,080	4,233	49	11,216		25
TEXAS	$5,178,895	$4,478,517	9,657,412	46	686,672	22	146
UTAH	$184	$7,573	7,757	98	1,876	1	1
VERMONT	$1,459	$2,523	3,982	63	4,764		4
VIRGINIA	$19,484	$132	19,616	1	52,301	1	18
WASHINGTON	$1,790	$72,022	73,812	98	43,517	1	6
W. VIRGINA	$211,688	$20,823	232,511	9	52,153	5	31
WISCONSON	$24,928	$4,017	28,945	14	149,842		6
WYOMING	$818	$1,587	2,405	66	123		2
TOTALS	$7,309,308	$21,869,636	29,178,944		5,502,114	72	892
AVERAGE				75			89

Damage values of less than $50 thousand dollars are shown as zeros.

TABLE - 3

FLOOD DAMAGE REDUCTION

FISCAL YEARS 1992 - 2001 (IN THOUSANDS OF DOLLARS)

LOCATION	FY 92	FY 93	FY94	FY 95	FY96	FY97	FY98	FY99	FY2000	FY2001	10 Yr. Avg
ALABAMA	0	0	0	0	0	0	0	0	0.0	$0	0
ALASKA	10,000	0	8,750	8,750	0	0	0	0	200.0	$0	2,770
ARIZONA	3,945	113,000	0	140,456	5,202	13,219	4,180	5,018	0.0	$1,820	28,684
ARKANSAS	65,947	161,070	861,023	1,350,558	1,066,854	5,733,106	712,907	680,519	33,729.0	$690,579	1,135,629
CALIFORNIA	406,036	750,435	138	1,484,202	389,649	3,042,730	2,623,156	87,235	339,137.0	$814,454	993,717
COLORADO	9,367	928	509	3,071	0	2,782	0	44,904	0.0	$0	6,156
CONNECTICUT	4,228	56,339	25,746	305	74,414	11,518	55,971	27,303	375.0	$37,364	29,356
DELAWARE	0	0	0	0	0	0	0	0	0.0	$0	0
FLORIDA	17,591	19,155	5,342	104,072	66,655	13,486	103,780	65,873	52,102.0	$58,849	50,691
GEORGIA	1,474	6,549	3,771	3,889	50,305	6,952	31,263	30,979	0.0	$0	13,518
GUAM			0	0	44	45	68	0	0.0	$0	16
HAWAII	194	10	6,728	5,126	4,608	2,349	0	0	0.0	$14,197	3,321
IDAHO	253	85,743	9,844	54,948	190,618	272,955	77,578	98,136	33,716.0	$16,797	84,059
ILLONOIS	10,369	2,483,431	94,914	2,664,865	553,925	557,829	361,233	42,836	32,631.0	$690,197	749,223
INDIANA	27,288	106,604	128,040	24,661	152,440	273,661	180,836	130,000	21,697.0	$30,700	107,593
IOWA	14,662	624,071	41,110	75,133	97,882	653,984	144,879	110,252	5,479.5	$413,414	218,087
KANSAS	298,933	5,760,259	32,293	849,044	65,443	87,605	16,614	511,726	18,947.0	$205,117	784,598
KENTUCKY	35,464	31,614	178,350	79,609	216,292	675,177	62,976	13,938	14,538.0	$18,287	132,625
LOUISIANA	1,005,357	7,452,058	7,903,263	9,683,360	5,311,449	12,264,278	5,271,162	11,219,104	1,292.0	$12,149,905	7,226,123
MAINE	0	0	0	70	0	0	0	0	0.0	$0	7
MARYLAND & DC	93,074	71,225	0	2	214,782	220	14	3	1,584.0	$26	38,093
MASSACHUSETTS	574	33,956	26,276	135	57,870	19,238	55,218	2,043	5,746.0	$50,709	25,177
MICHIGAN	412	0	0	867	344	23,345	20,690	2,419	2,160.0	$8,913	5,915
MINNISOTA	2,929	133,273	10,980	8,978	19,949	167,250	3,208	6,248	9,057.6	$278,971	64,084
MISSISSIPPI	155,364	105,666	121,003	1,059,468	628,384	1,380,714	843,968	779,525	4,420.0	$1,050,918	612,943
MISSOURI	299,878	9,793,809	769,333	5,740,837	2,240,713	7,903,399	227,701	4,768,711	11,620.0	$318,302	3,207,430
MONTANA	4,483	20,070	6,542	13,004	49,674	101,164	11,947	10,552	2,329.0	$948	22,071

TABLE - 3

FLOOD DAMAGE REDUCTION

FISCAL YEARS 1992 - 2001 (IN THOUSANDS OF DOLLARS)

LOCATION	FY 92	FY 93	FY94	FY 95	FY96	FY97	FY98	FY99	FY2000	FY2001	10 Yr. Avg
NEBRASKA	7,351	226,589	36,715	80,795	96,985	635,868	16,050	80,088	2,869.0	$19,466	120,278
NEVADA	0	0	0	63,611	19,974	852,687	3,149	3,780	1,400.0	$830	94,543
NEW HAMPSHIRE	0	3,549	250	0	1,250	943	916	171	0.0	$703	778
NEW JERSEY	445	5,836	8,355	13,017	10,008	27,172	6,097	46,248	2,720	$11,166	13,106
NEW MEXICO	27,619	109,486	164,439	29,195	116,598	52,598	453	7,799	50,076	$983	55,925
NEW YORK	6,120	157,744	56,334	31,201	568,026	234,297	62,932	181,293	71,549	$55,930	142,543
N. CAROLINA	8,474	24,023	54,536	26,823	558,461	65,769	114,667	158,248	556	$8,689	102,025
N. DAKOTA	942	109,062	35,802	32,848	76,344	342,323	47,222	97,009	12,139	$147,576	90,127
OHIO	6,601	107,340	312,590	47,934	828,586	397,145	318,700	96,744	93,672	$61,978	227,129
OKLAHOMA	52,838	556,345	87,545	196,801	12,739	65,815	76,439	160,575	72,130	$58,356	133,958
OREGON	47,243	87,844	83,039	1,342	2,755,876	4,203,503	419,550	666,153	945,434	$44,139	925,412
PENNSYLVANIA	3,046	189,825	46,304	3,954	3,497,659	141,559	66,007	53,213	50,716	$6,885	405,917
PUERTO RICO & VI	4,665	4,400	0	12,242	107,500	0	340,356	0	0	$23,000	49,216
RHODE ISLAND	0	2,145	0	0	0	114	9,672	0	0	$3,539	1,547
S. CAROLINA	625	300	2,268	943	955	149	735	0	0	$0	598
S. DAKOTA	4,140	1,978	651	7,992	1,152	62,073	915	3,248	457	$852	8,346
TENNESSEE	496	768	35,528	39,500	31,000	193,158	5,876	18,067	0	$2,080	32,647
TEXAS	5,197,449	2,631,802	5,707,236	2,672,764	4,736	5,113,947	646,713	626,444	557,632	$4,478,517	2,763,724
UTAH	700	34,326	4,553	0	0	8,120	0	10,361	0	$7,573	6,563
VERMONT	2,275	1,892	3,006	3,304	4,200	3,355	3,752	1,760	9,917	$2,523	3,598
VIRGINIA	124,553	18,683	3,621	5,736	135,894	5,598	41,446	16,956	7,836	$132	36,046
WASHINGTON	54,343	67,028	65,935	6,228	732,293	1,120,921	353,805	281,780	212,441	$72,022	296,680
W. VIRGINA	40,152	98,580	103,464	129,065	1,272,486	395,426	62,851	5,491	79,348	$20,823	220,769
WISCONSON	0	13,914	65	31	473	2,296	210	103	17	$4,017	2,113
WYOMING	1,373	22,095	3,750	19,548	23,480	29,217	9,020	8,805	569	$1,587	11,944
TOTALS	8,059,272	32,284,819	17,049,941	26,780,284	22,314,171	47,161,059	13,416,882	21,161,659	2,762,229	$21,883,833	21,287,415

TABLE 4

TOTAL FLOOD DAMAGES SUFFERED, BY STATE
FISCAL YEARS 1992-2001 (IN THOUSANDS OF DOLLARS)

LOCATION	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99	FY 2000	FY 2001	10 Yr. Avg.
ALABAMA	320	0	112,696	0	1,649	1,354	368,938	4,663	3,087	$1,645	49,435
ALASKA	7,302	0	74,000	10,025	0	1,271	314	0	110	$702	9,372
ARIZONA	5,189	228,900	1,616	6,618	701	85	66	12796	90	$13,659	26,972
ARKANSAS	909	2,680	2,024	0	205	12,874	2045	1777	2773	$689	2,598
CALIFORNIA	93,152	165,920	1,792	1,495,960	13,205	2,086,125	621588	14176	9238	$5,055	450,621
COLORADO	1,602	100	1,242	18,240	4,058	358,890	2550	50675	297	$1,242	43,890
CONNECTICUT	10,366	0	1,316	0	2,092	52	40	1112	6010	$237	2,123
DELAWARE	2	0	741	0	300	0	0	0		$1,100	214
FLORIDA	41,938	2,080	182,605	18,536	158,001	49,707	431311	60080	499080	$1,023,900	246,724
GEORGIA	1,156	7,340	300,000	8,845	2,581	464	166291	8520	2101	$3,431	50,073
GUAM	0	0	0	0	0	0	3725	400	650	$250	503
HAWAII	9,260	2,910	3,700	0	1,935	0	0	0	400	$70,000	8,821
IDAHO	224	0	0	2,096	49,400	125,060	1005	1297	85	$0	17,917
ILLINOIS	189	2,640,140	32,606	27,240	107,585	4,295	2380	3666	3113	$44,040	286,525
INDIANA	45,424	9,550	2,852	6,789	21,575	68,598	19611	50124	819	$110	22,545
IOWA	50,800	5,740,000	9,124	3,498	165,265	3,680	168,101	111,221	14,877	$33,250	629,982
KANSAS	10,127	551,070	10,437	8,874	3,969	102	4,888	60,030	250	$2,635	65,238
KENTUCKY	46,870	4,980	2,544	17,673	21,323	470,915	16,639	506	17,631	$17,986	61,707
LOUISIANA	4,191	4,020	675	3,097,250	121	4,359	17,845	5,979	153	$30,219	316,481
MAINE	2,179	3,040	9,323	0	4,916	26,845	0	1,580	2,814	$66	5,076
MARYLAND & DC	339	0	4,524	1,620	90,481	198	334	9,715	2,452	$3,460	11,312
MASSACHUSETTS	176	160	0	0	2,663	75,024	13,510	250	206	$10,048	10,204
MICHIGAN	355	1,600	6,236	2,900	26,690	325	18,190	325	25,430	$8,394	9,045
MINNISOTA	1,760	964,050	1,867	3,750	460	743,218	2,529	466	43,112	$243,706	200,492
MISSISSIPPI	1,010	4,480	1,352	1,092	200	32,774	3,498	1,769	408	$7,211	5,379
MISSOURI	2,044	3,429,630	37,864	25,415	871	692	10,227	36,862	109,760	$1,842	365,521
MONTANA	1,403	6,720	3,392	510	2,243	2,874	3,001	184	30	$80	2,044

Damage values of less than $50 thousand dollars are shown as zeroes.

TABLE 4

TOTAL FLOOD DAMAGES SUFFERED, BY STATE
FISCAL YEARS 1992-2001 (IN THOUSANDS OF DOLLARS)

LOCATION	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99	FY 2000	FY 2001	10 Yr. Avg.
NEBRASKA	6,683	294,500	2,710	5,129	31,233	10,273	1,483	22,765	23,456	$391	39,862
NEVADA	1,621	0	160	11,970	370	640,110	1,300	25,009	221	$12	68,077
NEW HAMPSHIRE	0	0	0	110	4,000	10,952	700	1,002	515	$0	1,728
NEW JERSEY	500	0	3,520	0	36,720	38,700	750	800,000	179,100	$0	105,929
NEW MEXICO	32,264	210	2,000	954	1,285	380	713	3,980	160	$4,260	4,621
NEW YORK	1,862	55,480	25,707	1,485	220,011	55,909	38,627	18,715	18,498	$7,290	44,358
N. CAROLINA	12,927	1,400	2,032	26,596	42,119	17,994	16,135	3,117,160	7,605	$11,780	325,575
N. DAKOTA	0	413,600	58,552	44,366	220	3,408,298	2,583	100,355	191,177	$65,209	428,436
OHIO	20,078	25,800	39,913	28,511	22,721	66,666	181,409	963	8,839	$13,647	40,855
OKLAHOMA	10,871	44,720	166	3,275	0	155	262	9,578	11,691	$9,847	9,057
OREGON	32	1,760	0	11,320	3,203,500	173,200	10	2,100	5,734	$5	339,766
PENNSYLVANIA	1,805	440	16,194	10,385	494,862	3,136	1,103	27,642	27,476	$63,506	64,655
PUERTO RICO & VI	90,127	5,300	160	115	131	157	28,190	4,488	1,341	$150,358	28,037
RHODE ISLAND	16	0	0	0	0	0		0		$3,005	302
S. CAROLINA	0	17,920	6,228	28,169	668	1,105	4,044	75	2,885	$75	6,117
S. DAKOTA	3,460	763,380	20,399	12,270	360	100,541	50	619		$13,567	91,465
TENNESSEE	204	5,070	51,039	1,264	2,740	23,479	25,427	554	230	$2,153	11,216
TEXAS	199,356	56,990	1,721	85,050	407,066	136,472	163,407	612,634	25,130	$5,178,895	686,672
UTAH	24	160	0	1,500	312	10,100	4,485	1,314	679	$184	1,876
VERMONT	2	7,550	1,502	5,150	5,123	170	23,805	1,036	1,845	$1,459	4,764
VIRGINIA	7,371	0	16,169	66,759	153,516	898	2,381	255,062	1,368	$19,484	52,301
WASHINGTON	176	2,080	160	250	370,060	54,675	3,120	2,371	488	$1,790	43,517
W. VIRGINA	5,791	620	5,397	8,595	224,172	18,391	35,506	363	11,003	$211,688	52,153
WISCONSON	29,305	903,660	62,052	675	218,025	93,346	82,825	9,305	74,298	$24,928	149,842
WYOMING	0	0	0	0	181	192	22	0	20	$818	123
TOTALS	762,762	16,370,010	1,120,309	5,110,829	6,121,884	8,935,080	2,496,963	5,455,263	1,338,735	$7,309,308	5,502,114

Damage values of less than $50 thousand dollars are shown as zeroes.

TABLE - 5

TOTAL LIVES LOST, BY STATE
FISCAL YEARS 1992-2001

LOCATION	FY 1992	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY2000	FY2000	10-Yr Total
ALABAMA	2	0	2	0	2	0	9	1	0	0	16
ALASKA	0	0	0	0	0	0	0	0	0	0	0
ARIZONA	3	3	0	1	0	12	4	0	0	14	37
ARKANSAS	0	2	0	0	0	0	1	0	0	0	3
CALIFORNIA	2	17	2	8	2	7	16	3	0	0	57
COLORADO	0	0	0	0	3	6	0	0	1	0	10
CONNECTICUT	1	0	0	0	0	0	0	0	0	0	1
DELAWARE	0	0	0	0	0	0	0	0	0	0	0
FLORIDA	2	0	0	0	2	0	0	0	2	2	8
GEORGIA	1	3	29	0	0	0	1	0	0	2	36
GUAM	0	0	0	0	0	0	0	0	0	0	0
HAWAII	6	0	1	0	0	0	0	0	0	0	7
IDAHO	0	0	0	0	1	0	0	0	0	0	1
ILLINOIS	0	1	2	1	2	1	1	0	4	1	13
INDIANA	1	1	1	3	2	1	2	4	1	1	17
IOWA	0	5	0	0	0	1	0	1	3	0	10
KANSAS	1	3	1	0	2	0	0	3	0	1	11
KENTUCKY	8	2	0	2	2	16	2	2	1	1	36
LOUISIANA	1	0	0	6	0	1	1	0	0	0	9
MAINE	0	0	0	0	0	1	0	0	0	0	1
MARYLAND & DC	0	0	0	0	3	0	0	0	0	0	3
MASSACHUSETTS	0	0	0	0	0	0	0	0	0	0	0
MICHIGAN	0	0	0	0	2	0	0	2	0	3	7
MINNISOTA	0	4	0	0	0	0	2	0	1	3	10
MISSISSIPPI	0	0	1	0	0	0	0	0	0	0	1
MISSOURI	0	29	11	3	7	4	4	14	0	4	76
MONTANA	3	0	0	0	4	0	0	0	0	0	7
NEBRASKA	0	5	0	0	0	0	0	0	0	0	5
NEVADA	0	1	0	1	0	3	0	1	0	0	6

TABLE - 5

TOTAL LIVES LOST, BY STATE
FISCAL YEARS 1992-2001

LOCATION	FY 1992	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY2000	FY2000	10-Yr Total
NEW HAMPSHIRE	0	0	0	0	0	0	1	0	0	0	1
NEW JERSEY	0	0	2	0	1	0	0	5	1	0	9
NEW MEXICO	0	0	0	0	4	1	0	0	0	0	5
NEW YORK	0	7	3	0	10	0	3	1	0	1	25
N. CAROLINA	2	1	0	9	1	3	0	32	0	0	48
N. DAKOTA	0	1	0	0	0	2	2	1	2	0	8
OHIO	2	0	1	5	3	5	8	2	4	3	33
OKLAHOMA	2	5	0	4	0	3	4	2	0	0	20
OREGON	0	0	0	0	6	1	2	0	0	0	9
PENNSYLVANIA	0	0	1	4	25	0	0	0	0	2	32
PUERTO RICO & VI	25	3	0	1	19	0	1	3	0	3	55
RHODE ISLAND	0	0	0	0	0	0	0	0	0	0	0
S. CAROLINA	0	2	0	3	1	0	2	0	0	1	9
S. DAKOTA	0	5	0	0	0	0	0	0	0	0	5
TENNESSEE	2	0	3	0	3	4	13	0	0	0	25
TEXAS	19	6	0	48	0	19	19	28	4	22	165
UTAH	0	0	0	0	0	0	1	0	0	1	2
VERMONT	0	0	1	1	2	0	0	0	0	0	4
VIRGINIA	1	1	2	2	9	0	0	0	1	1	17
WASHINGTON	0	0	0	0	1	1	0	0	0	1	3
W. VIRGINA	3	0	5	0	12	5	2	0	3	5	35
WISCONSON	0	1	2	0	0	1	1	0	1	0	6
WYOMING	0	1	0	1	0	0	0	0	0	0	2
TOTALS	87	109	70	103	131	98	102	105	29	72	906

TABLE - 6

REGIONAL DISTRIBUTION
FLOOD DAMAGES PREVENTED BY THE U.S. ARMY CORPS OF ENGINEERS
FISCAL YEARS 1980-2001 (IN THOUSANDS OF DOLLARS)

REGION	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90
NEW ENGLAND	75,911	53,661	239,970	9,496	839,029	625	665	463,321	0	250	63,094
MID-ADLANTIC	16,740	24,171	10,419	25,703	2,486,292	18,823	357,665	30,340	26,450	24,802	16,607
GULF & S. ATLANTIC	28,086	2,499	24,398	49,384	27,756	21,301	41,774	219,938	11,438	30,014	57,057
OHIO	289,655	231,431	188,802	207,363	556,603	268,796	633,658	172,866	63,538	285,510	248,699
TENNESSEE	0	0	0	0	0	45	570	4,376	0	16,176	3,082
GREAT LAKES	9,594	9,842	27,836	5,856	24,953	30,107	28,071	51,245	9,587	24,982	16,849
UPPER MISSISSIPPI	0	11,622	96,150	251,594	66,209	57,941	113,777	430,592	1,576	6,761	516,506
SOURIS-RED-RAINY	0	0	0	2,700	1,314	1,721	18,966	52,015	411	68,814	7,156
MISSOURI	2,243	89,862	370,993	435,296	1,077,828	32,555	860,513	1,504,538	2,669	176,066	250,873
ARKANSAS-RED-WHITE	108,025	11,617	55,960	161,010	88,788	168,558	174,737	996,615	161,923	186,727	456,041
LOWER MISSISSIPPI	4,087,675	3,067	552,850	20,386,036	10,294,428	9,820,704	9,336,140	666,758	1,453,371	5,970,206	10,820,837
RIO GRANDE	46,260	889	2,526	29,918	98,419	127,698	87,139	113,621	21,528	2,755	42,531
TEXAS AND GULF	14,910	83,436	441,874	17,537	8,513	28,840	208,168	190,914	6,026	535,689	4,105,103
COLORADO	117,761	0	0	13,000	90,630	14,300	0	0	0	0	0
GREAT BASIN	0	0	8,000	15,015	18,600	2,200	16,300	0	0	500	500
CALIFORNIA	1,981,428	680	307,013	1,075,869	102,360	72,800	13,910,920	154,858	98	4,770	9,500
COLUMBIA N PACIFIC	514,257	633,016	1,939,909	547,510	979,308	94,350	1,521,659	125,995	296,159	918,874	962,433
ALASKA	2,117	4,473	4,741	4,885	5,055	6,846	6,828	17,000	0	8,000	0
HAWAII & GUAM	4,254	220	800	624	0	0	220	220	8,540	82	1,085
TOTALS	7,298,916	1,160,486	4,272,241	23,238,796	16,766,085	10,768,210	27,317,770	5,195,212	2,063,314	8,260,978	17,577,953

TABLE - 6

REGIONAL DISTRIBUTION
FLOOD DAMAGES PREVENTED BY THE U.S. ARMY CORPS OF ENGINEERS
FISCAL YEARS 1980-2001 (IN THOUSANDS OF DOLLARS)

REGION	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY2000	FY2001	1992-2001 Avg
NEW ENGLAND	11,010	4,528	95,580	51,906	375	132,805	31,243	121,825	29,147	680	89,058	55,715
MID-ADLANTIC	8,993	97,947	277,641	34,455	33,530	1,881,703	224,560	79,819	250,493	97,647	61,760	303,956
GULF & S. ATLANTIC	31,003	150,717	70,326	68,517	149,705	830,955	88,877	598,430	257,000	52,668	91,978	235,917
OHIO	655,077	102,832	369,414	714,206	248,096	4,809,346	1,706,408	726,721	281,676	253,742	128,756	934,120
TENNESSEE	334,809	18,920	13,304	52,909	12,480	2,305	131,135	8,326	5,017	0	4,280	24,868
GREAT LAKES	19,100	5,702	124,935	50,981	24,810	141,824	112,230	25,977	19,190	13,979	28,643	54,827
UPPER MISSISSIPPI	27,200	19,043	1,303,564	14,979	7,147	22,160	570,094	390,463	99,151	45,675	1,320,098	379,237
SOURIS-RED-RAINY	4,700	517	91,473	6,875	28,686	67,053	154,001	36,316	76,877	8,153	217,695	68,765
MISSOURI	272,237	609,640	11,573,040	206,912	4,466,330	2,199,478	7,207,086	177,769	5,111,491	21,228	521,933	3,209,491
ARKANSAS-RED-WHITE	43,396	87,792	949,112	206,387	469,242	60,386	187,332	183,987	688,697	122,313	98,473	305,372
LOWER MISSISSIPPI	15,457,393	1,213,731	13,538,946	9,589,003	16,904,365	7,925,144	22,033,170	6,933,597	12,507,805	6,217	13,869,161	10,452,114
RIO GRANDE	91,189	39,619	109,486	164,439	29,195	116,598	52,598	453	52,570	50,076	983	61,602
TEXAS AND GULF	13,717	5,184,633	2,621,230	5,705,933	2,632,986	4,425	5,113,613	646,241	626,317	557,532	4,478,069	2,757,098
COLORADO	0	3,945	147,326	0	204,067	25,176	31,616	7,329	8,931	1,400	2,650	43,244
GREAT BASIN	1,500	700	0	4,553	0	0	842,730	0	10,361	0	7,573	86,592
CALIFORNIA	64,022	406,036	750,435	138	1,484,202	389,649	3,042,730	2,623,156	87,235	339,137	814,454	993,717
COLUMBIA N PACIFIC	432,754	102,776	248,997	162,270	71,192	3,700,512	5,629,242	856,406	1,049,702	1,191,591	134,072	1,314,676
ALASKA	8,100	10,000	0	8,750	8,750	0	0	0	0	200	0	2,770
HAWAII & GUAM	5,457	194	10	6,728	5,126	4,652	2,394	68	0	0	0	1,917
TOTALS	17,481,657	8,059,272	32,284,819	17,049,941	26,780,284	22,314,171	47,161,059	13,416,883	21,161,659	2,762,239	21,869,636	21,285,996

TABLE 7

2001 ATLANTIC OCEAN TROPICAL CYCLONES AND THEIR EFFECTS

NAME	CLASS	Category	DATES	Max Wind (Kt.)	Min Pressure (MB)	Damages In U.S.A. ($ Million)	Lives Lost in U.S.A.	State Most Effected
ALLISON	Tropical Storm	--	05-17 Jun	50	1000	5,000	41	Texas
BARRY	Tropical Storm	--	02-07 Aug	60	991	30	2	Florida
CHANTAL	Tropical Storm	--	14-22 Aug	60	997	*	-	Belize
DEAN	Tropical Storm	--	22-28 Aug	60	994	2	-	Porto Rico
ERIN	Hurricane	3	01-05 Sep	105	968	-	-	off shore
FELIX	Hurricane	3	07-18 Sep	100	962	-	-	off shore
GABRIELLE	Hurricane	1	11-19 Sep	70	983	230	1	Florida
HUMBERTO	Hurricane	2	21-29 Sep	90	970	-	-	off shore
IRIS	Hurricane	4	04-09 Oct	125	948	-	-	Belize
JERRY	Tropical Storm	--	06-06 Sep	45	1004	-	-	off shore
KAREN	Hurricane	1	12-15 Oct	70	982	-	-	Bermuda
LORENZO	Tropical Storm	--	27-31 Sep	35	1007	-	-	off shore
MICHAEL	Hurricane	4	29 Oct-05 Nov	120	933	-	-	**Cuba
NOEL	Hurricane	1	04-06 Nov	65	986	-	-	off shore
OLGA	Hurricane	1	24 Nov-04 Dec	80	973	-	-	off shore

Saffin-Simpson Scale for Wind Speed

Tropical Storm: 34-63 kt (39-73mph)
Huricane Cat 1: 64-83 kt (74-95 mph)
Huricane Cat 2: 84-96 kt (96-110 mph)
Huricane Cat 3: 97-113 kt (111-130 mph)
Huricane Cat 4: 114-135 kt (131-155 mph)
Huricane Cat 5: Greater than 135kt (155 mph)

* $4 million in Belize plus additional damage in Mexico
** Also several Central America contries

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No entries